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J. B. HOEING, State Geologist

COALS OF MIDDLE FORK

OF

KENTUCKY RIVER

IN

Leslie and Harlan Counties

BY

JAMES M. HODGE

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CONTENTS.

INTRODUCTION.*

This report follows an investigation made in 1917 of coal openings on Middle fork, Kentucky river, beginning with Hell-for-Certain creek and including all the drainage area above that stream. Nearly every opening in condition to examine was visited and to the data acquired from them is added that from several previous visits by the writer to the region.

There is omitted from this report, however, all but a few of the analyses of coal heretofore given, because of the wrong impression liable to be given by the inferior quality of the outcrop coal from which the samples were necessarily obtained. Even the few analyses retained are open to suspicion, although the samples were taken from solid coal underground.

The general direction of dip of strata is northeasterly, but with several minor variations. Near the mouth of Greasy creek is the bottom of a shallow elliptical basin with major axis running thence northward nearly to Hyden, while in other directions the rim is but a mile or two away, or merges into the general slope of strata.

Between the mouths of Greasy creek and Beech fork there is a roll of somewhat more than the usual amplitude in the Kentucky river field. Its syncline apparently runs notheastward crossing Saltwell branch at its mouth. A pitch of strata of about 10% was noted here, but the roll must rapidly die out lengthwise as the syncline has not been remarked elsewhere. An anticline between Middle fork and Greasy creek ensues and a very slight parallel syncline has been found on Greasy creek, entailing a second roll with anticline probably following the ridge from the head of John's creek, Middle fork below Greasy creek, to the head of Tantrough branch, Greasy creek.

On the eastern tributaries of Cutshin creek above Pauls creek and on those on the east near the head of Greasy creek, the dip is generally northwestward.

Excepting the pitch about Saltwell branch and a few minor rolls of no importance no dip of strata has been

*Owing to the change made by the Legislature of 1918 in the Geological Survey, no map could be prepared to accompany this report as had been intended. The reader is referred to the co-operative topographic sheets issued by the U. S. Geological Survey for topography of this area.—J. B. H.

noted which exceeds 2% and over most of the region it is less than 1%, until the Pine mountain fault is reached.

Where the three Middle fork streams, Greasy creek, Laurel and Beech forks, leave Pine mountain on their northwesterly course, strata conform with the dip farther north, but at several points along the southern base of Kentucky ridge, subsidiary faults are projected from the mountain into the ridge How far they extend has not been investigated, but so far as yet has appeared they are of little importance, and the fault line may be assumed to lie along the valleys at the base of Pine mountain. Only where Greasy creek and Beech fork leave the mountain can there be any coal areas in the base of Pine mountain such as have been found on North fork headwaters, and there they can be of only very small extent. The northern face of Pine mountain may be said to be virtually without coal.

Altitudes range from 780 feet above sea level at the mouth of Hell-for-Certain creek to 2,450 feet on the top of Kentucky ridge, where strata lie nearly level, and to 3,000 feet on Pine mountain.

The principal coal beds above drainage in the region with approximate normal intervals between them are as follows:

Helton Coal
Interval 150 feet.
Hindman Coal.
Interval 50 feet.
Francis Coal.
Interval 100 feet.
Flag Coal.
Interval 60 to 100 feet.
Hazard Coal.
Interval 60 to 80 feet.
Haddix Coal.
Interval 100 feet.
Hamlin Coal.
Interval 60 to 90 feet.
Fire-clay Coal Rider.
Interval 0 to 50 feet.
Fire-clay Coal.
Interval 20 to 60 feet.
Whitesburg Coal.
Interval 200 feet.
Amburgy Coal.

In the field the following assumptions have been found particularly useful.

Helton Coal.
Interval 150 feet.
Hindman Coal.
Interval 250 feet.
Hazard Coal.
Interval 150 feet.
Hamlin Coal
Interval 100 feet.
Fire-clay Coal.
Interval 50 feet.
Whitesburg Coal.

Outcropping coal-bearing strata have a total thickness, from the Amburgy bed to about 350 feet above the Helton bed, of 1,200 feet or more; but no knowledge has been acquired of the coals of the upper 300 feet, their area being small and their height rendering them useless for present valuation.

Intervals between beds and the beds themselves are obscured, to a degree not known on other Kentucky river waters, by their splitting up into numerous small seams with possible merging of some of them one with another.

The highest coal found lies about 70 feet above the Helton bed, but in the few places where it was seen it appeared to be thin. Iron ore croppings close above it help to identify the coal.

HELTON COAL.

In a former report, Bulletin No. 11, the existence of this bed was not recognized, a tentative assumption correlating it with the Hindman coal, supposing the interval from the latter to the Flag bed to increase southward enough to justify that assumption. It is now found that that interval remains nearly constant and a new name is added to the list of beds, derived from the opening best known.

The bed is too high to touch the hills farther north than Hyden, and only farther south than the mouth of

Greasy creek is an area large enough and with sufficient covering to be found, the area increasing to a large one in Kentucky ridge.

The bed varies in thickness from 7 feet coal with 1 foot parting on White Oak creek of Greasy creek, down to 44 inches coal with 9-inch and 2-inch partings on Spruce Pine branch of Middle fork, but seems to be generally 5 to 8 feet thick and a good workable bed.

The coal seems to be a rather soft bituminous of good bright lustre and should rank well with other coals of the region.

HINDMAN COAL.

This coal lies near the tops of the highest ridges in the northern part of the field and gives workable areas as far north as Hyden.

The bed is too high to have received much attention and openings made have been generally abandoned because of inaccessibility if not from lack of coal. On Flackey branch, 2 miles east of Hyden, and on Pauls creek of Cutshin creek, it has about 6 feet of coal, with 3 inches parting in the former. Southwest from these openings it is not known to be in workable condition, but it is too largely unexplored for condemnation.

FRANCIS COAL.

This bed is noted more for convenience in correlation than for intrinsic value. As in other fields, it approaches workable thickness in some places, but its height militates against exploitation.

FLAG COAL.

This bed has been found in only one place of workable thickness having there, on the head of Laurel fork of Cutshin creek, 3½ feet of bituminous coal enclosing 2 feet of cannel. In the few other places visited none showed more than 3 feet of coal. It is likely that valuable pockets of the bed may be found in the future.

HAZARD COAL.

This bed has a fine field on the east of Cutshin creek, with 6 feet of coal on Oldhouse branch, below Cutshin creek and nearly 4½ feet (with 3-inch parting) on Guthrie fork, near the head of Cutshin creek. Intermediate openings and others on Leatherwood creek, across the eastern divide also show thick coal, though opposite the head of Right fork, Macies creek, the bed is thin or split. East of Cutshin creek the bed is split and worthless with few exceptions, notably toward the head of Greasy creek, when both splits become of workable thickness, and in the ridge at the head of Coon creek of Cutshin creek.

In North fork reports a bed about midway between the Hazard and Haddix beds is called the Young coal, which name might be applied here to the lower split; but that split is nearer to the upper one than the Young bed has been found to be and is so clearly an offshoot of the Hazard bed that, when recognized, it is termed the lower split.

The name Hazard is usually applied when it is doubtful which split is opened; and in all the beds below the Hazard like uncertainty as to whether the main bed or one or more of its parts often occurring has led to naming such parts as though the whole of the bed was included.

HADDIX COAL.

This bed, variable in thickness, but generally of extra fine quality, has been found over 3 feet thick only on Wooten creek of Cutshin creek, but its outcrop is apt to be deeply covered. Openings in it are few, and no reason is apparent why very valuable pockets of the coal may not be found in this region, as large ones have been on North fork waters.

HAMLIN COAL.

The only place where this bed is found of workable thickness is near the head of Laurel fork of Greasy creek and there it is of somewhat doubtful correlation, and,

as usual with this bed, of rather poor quality. Through much of the region it is accompanied by a split from it, or a separate thin bed, but nevertheless, being half way between the Haddix and Fire-clay coals, it is an important aid to correlation.

FIRE-CLAY COAL RIDER.

Over much of the region this bed is close to the border line between workable and non-workable coals. Probably the largest area workable is along Cutshin creek above Pauls creek, where it attains a thickness of 5 feet of coal, with thin partings. Its best known opening is on Tantrough branch of Greasy creek, where it has 39 inches of clean fine cannel coal, but the pocket appears to be small. At several localities, particularly on Greasy creek near its mouth, and again above Beech fork, it has fairly thick coal practically ruined by a half dozen or more partings.

FIRE-CLAY COAL.

This is by far the most valuable bed of the region, with large areas of workable coal lying at convenient height above stream level through most of it, especially where its coal is thickest, and with coal of exceptionally good quality.

Decidedly its finest field is embraced in the triangular area from the mouth of Cutshin creek up to Wooten creek, and thence across to Middle fork and half way up Rockhouse creek, with Hyden nearly in the center. The coal of this area in the many openings made is rarely under 3 feet thick, above its flint-clay parting, and probably averages well up to 4 feet of clean or nearly clean coal.

Most of the way along Cutshin creek above Wooten to where it goes below drainage the bed carries 3 feet or more of clean coal above the flint-clay, but occasional thinner places cut into it.

On Greasy creek the bed does not show well until above Lewis creek, where for several miles up to where it goes below drainage, it is in excellent workable condition.

On Beech fork the bed is generally either much split or barely up to workable thickness.

On Middle fork above Hyden, the coal is variable, showing in isolated instances some thick coal and elsewhere much not in condition to work, much that may be or may not be, according to extraneous conditions, and all without constancy.

While in many instances the flint-clay parting has not been noted because covered by water or otherwise, it has been found absent in numerous places and in others replaced by shale or common clay, in several places by a thick white clay powder, a variation not known elsewhere. These changes are intermittent and without any apparent regularity.

Probably the bed generally carries coal below the flint-clay, which, now left untouched, may with more expert mining be removed and the coal below utilized.

In some places the bed shows the same tendency to split, both above and below the flint-clay, noted of beds above; openings on Peter branch of Beech fork, giving the best illustration of it. This splitting and that of the Rider are especially apt to create difficulty in correlation, the two beds coming so nearly together.

Analyses of the coal given, though taken from under ground, are not credited with giving a fair representation of the coal, which, to all appearances, is on a par with that mined from the same bed about Hazard, which now has an established reputation as one of the best steam coals of Eastern Kentucky.

WHITESBURG COAL.

As well displayed about Hazard, this bed is split into many parts, more than on the North fork. Otherwise the bed would be of considerable value, but it does not appear that they come together in this region. Entries have been made into a lower seam of the bed on Greasy creek near its mouth, where a number of higher seams are also visible, and at other places, but the bed cannot be classed as workable. Like the Rider, the upper seams of the bed are sometimes difficult to distinguish from the lower seams of the Fire-clay coal.

AMBURGY COAL.

This bed is at river level at the mouth of Hell-for-Certain and continues at or near the level of Middle fork to its final disappearance below drainage near the mouth of Greasy creek.

On Middle fork affluents from the west it is above drainage for distances depending on the slope of the stream bed, strata rising southwestward, but only on Asher branch, below Hyden, does it attain workable thickness, so far as known. The coal there was mined to a considerable extent in former years for shipment down the river, but since that was abandoned little mining has been done. The numerous openings and exposures along Middle fork indicate a small pocket only on Asher branch. Several entries about Hyden have been abandoned in favor of the thicker and better Fire-clay coal.

A report years ago, repeated recently, of thick coal in Middle fork near One-Mile branch needs verification.

The bed is in two splits, each of which is often cut by one or two partings.

DETAILED DESCRIPTIONS.

In the following detailed description is included all observed data of strata noted with a view to obtaining not only the fullest knowledge possible under present conditions of development of all workable beds, but also of such other beds as may become workable in the future, or may assist in correlation.

Measurements given in inches are exact unless otherwise stated, given in feet are approximate only. Distances in yards are by estimation and in miles as obtained from maps or by report or estimation. In traversing the main streams there may be in the total mileage a considerable error, but for approximate distances from point to point not far apart they may be relied upon.

Altitudes of mouths of streams are generally correct to within 5 feet, occasionally to within one foot, recent accurate leveling having been carried over the entire region. Altitudes of coal openings were determined by barometer, but with opportunities for reference to those levels near at hand, serious errors in altitude have been generally avoided. Altitudes of former reports have been corrected to conform to the recent levels.

Entries into which water prevented access are designated as wet entries; those in which the face was not seen are called long entries.

HELL-FOR-CERTAIN CREEK.

On the right (looking up the river), 9 miles below Hyden: Altitude of mouth, 780.

MILL BRANCH.

On the left, 1⅜ miles up Hell-for-Certain creek: Altitude of mouth, 848.

A prospect on the right, ¾ mile up this branch, gives the following section approximately, the total thickness of bed being about 3 feet:

Fire-clay Coal.

Shale	5 ft.
Coal	1″
Parting	3″
Coal	10″
Parting	4″
Coal.	
Soft clay	1 ft.

Altitude, 980.

The altitude and resemblance of bed section to other Fire-clay coal exposures on this creek, are sufficient for correlation, though no flint-clay appears in either parting, as is the case on Bull creek.

An exposure on the left, 1¾ miles up Hell-for-Certain creek, gives the following:

Whitesburg Bed.

Sandstone (Rock-house)	20 ft.
(?) Shale	5 ft.
Coal	9″
Fire-clay.	
Sandstone	3½ ft.
Shale	1½ ft.
Coal	4″
Shale and clay	4 ft.
Coal	8″
Shale (to creek)	3 ft.

Altitude, 890.

On the right and right of the the road, 2½ miles up the creek, is the following outcrop:

Fire-clay Coal.

Sandstone	20 ft.
Coal	10″
Flint clay	4″
Coal	4″
Clay	1 ft.

Altitude, 960

DEVIL'S JUMP BRANCH.

On the right, 2¾ miles up the creek.

Early investigation gave the following on this branch, the altitude probably somewhat higher than it should be:

Fire-clay Coal.

Sandstone	10 ft.
Coal	6″
Flint clay	4″
Coal	4″

Altitude, 980.

The following coals were found at that time from 2¾ to 4¼ miles up the creek. So far as appears from a recent visit no more satisfactory beds have been found.

	Shale	10 ft.
	Coal	20″
Francis Coal	Altitude, 1455.	
	Coal stain and bench.	
Flag Coal	Altitude, 1355.	
	Shale	10 ft.
	Coal	9″
	Shale	3″
	Coal	5″
	Shale	1″
	Coal	1″
Haddix Coal	Altitude, 1185.	
	Shale	10 ft.
	Coal	15″
Hamlin Coal	Altitude, 1050.	
	Sandstone.	
	Shale	5 ft.
	Coal	12″ Altitude, 1025.
	Sandstone	20 ft.
	Coal	19″
Rider	Altitude, 1005.	
Fire-clay Coal	Altitude, 980.	

The foregoing correlations are given as suggestive only, altitudes constituting the only and insufficient guide.

A black fossil limestone, 5 feet thick, found on the head of Peach Orchard branch, next below Hell-for-Certain creek, 345 feet above the Fire-clay coal, appears to be between the Hazard and Flag coals.

OLDHOUSE BRANCH.

On the left, 8½ miles below Hyden: Altitude of mouth, 785.

On the left of a left hollow, ¼ mile up both Oldhouse branch and hollow, a stripping gave 18 inches of hard splint coal on a foot of clay at altitude 1,280. A prospect 20 feet higher gave a bed of coal and shale reported 4 feet thick. When first partly opened it gave the following section, only 8 feet above the 18-inch coal, which seems to be an offshoot from the bed above it:

Flag Coal.

Earth.	
Coal stain	6″
Clay	8″
Coal	4″
Shale	7″
Coal	14″
Bituminous shale	1 ft.
Altitude, 1300.	

A spring below these openings, at altitude 1,180, with coal reported there, probably marks the place of the Young coal, the apparent top of the cliff beneath it, conspicuous on Oldhouse branch, being at altitude 1,130.

The same 20-foot cliff-rock, ¾ mile up the branch, has its top there at altitude 1,120, and a prospect on the right there gave 14 inches of the hard splint coal at altitude 1,275, the slipped coal of the higher seams showing in the top of the cut.

On the left, a mile up the branch, the Henry Begley heirs have a 20-yard entry with the following section half way in and a total thickness of 69 inches at the face:

Hazard Coal.

Sandstone	3 ft.
Coal	29″
Bone coal	2″
Coal	3″
Bone coal	2″
Coal	36″
Altitude, 1225.	

My sample of this coal from the former face, 10 yards in, gave the following results to analysis:

Laboratory No. 2734.

Moisture	1.91
Volatile combustible matter	38.29
Fixed carbon	52.45
Ash (light buff)	7.35
	100.00
Sulphur	0.74
Phosphorus	0.023
Coke (dense, spongy)	59.80
Specific gravity	1.299
Total carbon	73.62
B. T. U. per pound of coal	13,613

"This should be a fairly good coking coal." It is a hard coal, with considerable mixture of splint, little injured by the bone coal included.

The splint coal is said to have been opened 60 feet above the entry.

POLLY MORRIL BRANCH.

On the left, 7¼ miles below Hyden: Altitude of mouth, 795.

On the right, ⅜ mile up this branch, is 2 inches of coal in sandy shale at altitude 955. In the branch, ⅝ mile up, is 7 inches of coal under shaly sandstone, at altitude 910. On the left of a right branch, at its mouth, ⅝ mile from the river, is 18 inches of coal, at altitude 940, lying on 2½ feet of black slate containing coal,

with 5 feet of shaly sandstone covering it. This appears to be of the Fire-clay coal bed.

On the left of the river, 100 yards below Bull creek, is a permanent bench mark at altitude 843.

BULL CREEK.

On the right, 6½ miles below Hyden: Altitude of mouth, 800.

The following coals were found in early prospecting about the mouth of Bull creek:

Haddix Coal

Sandstone	10 ft.
Coal	16″
Clay.	
Altitude, 1205.	

Hamlin Coal.

Shale	2 ft.
Coal	6″
Shale	14″
Coal	4″
Altitude, 1095.	

Fire-clay Coal.

Shale	2 ft.
Coal	12″
Impure flint clay	1″
Coal	16″
Altitude, 1000.	

In a left drain, ½ mile up the creek, an outcrop gives the following unnamed coals somewhat more than 100 feet below the Fire-clay coal:

Shale	15 ft.
Black slate	6″
Coal	9″
Shale	15 ft.
Coal	6″
Fire-clay.	
Sandstone	20 ft.
Altitude (lower coal), 865.	

On the right of the creek, ½ mile up it, Sherman Begley has a 10-yard entry with the following bed section 2 yards in:

Whitesburg Coal.

Shale.	
Coal	1″
Shale	6″
Coal	33″
Bone coal	2″
Clay.	
Altitude, 955.	

Pyrite is reported on the bone coal at the face of the entry.

The following was also found at this place in the first prospecting:

Fire-clay Coal Rider.

Sandstone.	
Coal	15″
Clay	½ ft.
Shale	8 ft.
Coal	7″
Shale	5″
Coal	8″
Shale	2″
Coal	2″
Clay.	
Altitude, 1060.	

On the left, ¾ mile up Bull creek, Jackson Begley has a long entry into the Whitesburg bed, at altitude 955, with 2½ feet of coal at its mouth, covered by 8 feet of shale and then 15 feet of massive sandstone. Pyrite is in the dump here as at the Sherman Begley entry.

LOWER FIELD BRANCH.

On the left, 1⅛ miles up Bull creek: Altitude of mouth, 830.

On the left, ¼ mile up the branch, Eli Begley has a wet entry into the Whitesburg bed, at altitude 950, with coal, under shale, reported 35 inches thick. Pyrite is also in this dump.

On the left, 2¾ miles up Bull creek, 20 feet above it, Sally Sizemore has a closed entry with the following section at its mouth:

Whitesburg Coal.

Shale	10 ft.
Coal	1″
Bituminous shale	2″
Coal	30″
Clay.	
Sandstone	10 ft.

Altitude (of coal), 885.

On the right, 2⅞ miles up the creek, the mouth of a 6-yard entry, at altitude 880, gives a like section but with the main seam of coal reduced to 20 inches, the lower part bony and slaty.

WOLF PEN BRANCH.

On the left, 3 miles up Bull creek: Altitude of mouth, 890.

A bench mark on the right of the road opposite the mouth of Wolf Pen branch is at altitude 892.

On the right, at the mouth of this branch, an 8-yard entry gives at its mouth a section again like the preceding, with 28 inches of coal, the bottom 4 inches slaty and bony. Its altitude is 910.

A stripping on the left, 4 miles up the creek, gives the same Whitesburg coal, about 1½ feet thick, at altitude 935. The bed goes below drainage 4⅛ miles up.

THOUSAND STICKS BRANCH.

On the left, 5⅛ miles up Bull creek: Altitude of mouth, 940.

On the right of the branch, ⅜ mile up it, a 4-yard entry, at altitude 1,040, has about 25 inches of coal under 5 feet of shaly sandstone and on a hard floor. This is probably of the Fire-clay coal bed.

On the right, ½ mile up the branch and 10 feet above it, is 10 inches of coal at altitude 1,040. This appears to be about 10 feet above the preceding, and, exposed 15 feet over it, is 2 inches more of coal.

DAVIDSON FORK.

On the left, 5½ miles up Bull creek: Altitude of mouth, 1,015.

In this fork, ¼ mile up it, is 2 inches of coal, at altitude 1,040, and a foot above it 6 inches of black slate which weathers into blocks nearly square.

On the right and left at the fork, ¾ mile up, 20 feet above stream, are closed openings, at altitude 1,130, probably of the Hamlin bed.

On the right at the head of the right fork, ¾ mile up it, William Sizemore has a 12-yard entry into 33 inches of coal under shale roof. There is a knife-edge parting 12 inches from the top and the coal is hard and bony 3 to 12 inches below that.

This coal cuts the tops of the highest small knobs in the vicinity, its altitude being 1,610. It lies about 100 feet above the Hindman coal, the broad bench of which, below the entry, is at altitude 1,510.

CUTSHIN CREEK.

On the left, 6½ miles below Hyden: Altitude of mouth, 880.

STILLHOUSE BRANCH.

On the left, 1¼ miles up Cutshin creek: Altitude of mouth, 810.

On the left and at the branch, ½ mile up it, the top (?) of the Whitesburg bed shows in outcrop 10 inches of coal under one foot of black slate and then 2 feet of shale, at altitude 890.

A stripping on the left at the branch, ¾ mile up, shows the following section:

Fire-clay Coal.

Shale	25 ft.
Coal	2 to 3 ft.
Flint clay	4″
Coal	5″
Fire-clay.	

Altitude, 940.

The coal over the flint clay is probably without parting.

On the left at the head of the branch, 1 mile up, Pleasant Woods has a 12-yard entry into the Francis coal, 36 inches thick, 2 yards in, under 20 feet of sandstone and with a soft clay floor. The coal is mainly splint. Its altitude is 1,415.

Below this entry the place of the Hazard coal is approximately marked by a broad bench, at altitude 1,230, with another bench 15 feet lower.

HURRICANE BRANCH.

On the left, 1½ miles up the creek: Altitude of mouth, 810.

On a right drain, ⅜ mile up the branch, a closed entry into the Fire-clay coal, at altitude 955, has over it 10 feet of shaly sandstone, then 2½ feet of shale and clay and then 3 feet of bituminous shale and clay. The thinning of the sandstone as found on Stillhouse branch, is especially noticeable.

On the left, ½ mile up, Henry Lewis has a 6-yard entry with the following bed section at its face:

Fire-clay Coal.

Sandstone.	
Coal	34″
Flint clay	6″
Coal	7″
Fire-clay.	
Altitude, 945.	

On the right, 1¾ miles up Cutshin creek, E. M. Nolan has a 2-yard entry giving the following bed section:

Fire-clay Coal.

Laminated sandstone	5 ft.
Coal	28″
Flint clay	4″
Coal	6″
Altitude, 925.	

ADAMS BRANCH.

On the right, 2¼ miles up the creek: Altitude of mouth, 815.

On the left, at the mouth of the branch, the following section was obtained, the main coal measured 5 yards in a 20-yard entry. On the right, slightly above the preceding, John Creech has a long entry, its section as measured 2 yards in also following:

Fire-clay Coal.

On Left.		On Right.	
Earth.		Shaly sandstone.	
Coal stain	20″	Coal	32″
Black slate	3″	Flint clay	5″
Coal	3″	Coal over	3″
Clay and shale	3 ft	Altitude, 940.	
Coal	44″		
Hard floor.			
Altitude, 945.			

On the right, ⅜ mile up the branch, Asbury Redon has a 3-yard entry with the following section at its mouth:

Fire-clay Coal Rider.

Sandy shale	10 ft.
Coal	1″
Shale	5″
Coal about	32″
Clay.	
Altitude, 975.	

The place of the Fire-clay coal bed is indicated by a spring and coal outcrop under the entry, at altitude 940.

In a right drain, 2½ miles up Cutshin creek, on the left, ⅛ mile up the drain, John Munsey has a prospect giving the following:

Fire-clay Coal Rider.

Shale	10 ft.
Coal	1″
Shale	2 ft.
Coal over	2 ft
Clay.	
Altitude, 975.	

Correlation is determined here, besides by the altitude as compared with openings in the vicinity, by the fact that here, as in other openings on this creek, the Rider coal shows much greater tendency to lamination than the Fire-clay coal, the latter being harder, more of a block coal, and apparently of much better quality.

On a left branch, 2¾ miles up the creek, on the left, ⅛ mile up the branch, Kirk Wooten has a 5-yard entry with the following bed section at its mouth:

Fire-clay Coal.

Shale	15 ft.
Coal	40″
Flint clay	2″
Coal	6″
Fire-clay.	

Altitude, 940.

SCHOOLHOUSE BRANCH.

On the left, 3¼ miles up Cutshin creek: Altitude of mouth, 820.

In the branch, ¼ mile up it, the top (?) of the Whitesburg bed has 9 inches of coal under 1½ feet of black slate, at altitude 865.

On the right at the mouth of the left fork, ¾ mile up the branch, Mr. Begley has a 15-yard entry with the following bed section at its face:

Fire-clay Coal.

Shaly sandstone	3 ft.
Shale	1 ft.
Coal	26″
Flint clay	4″
Coal	10″
Clay.	

Altitude, 930.

The bottom coal shows an increase from 6 inches at the mouth of the entry and the flint clay a decrease from 6 inches.

A 15-yard entry into the same bed, at altitude 935, shows the bed about 3½ feet thick there.

PIED BRANCH.

On the right, 3¼ miles up Cutshin creek: Altitude of mouth, 820.

On the left at the mouth of this branch, James Campbell has a 12-yard entry with the following sections:

Fire-clay Coal.

At Mouth.		At Face.	
Sandstone	5 ft.	Sandstone.	
Coal	8″	Coal	10″
Sandstone	4″	Sandy clay	3″
Coal	1″	Coal	40″
Sandstone	1″		
Coal	41″		

Altitude, 945.

On the right, 3⅞ miles up Cutshin creek, Minton Wooten has a 20-yard entry into the Fire-clay coal at altitude 940, having 37 inches of coal 5 yards in, on 5 or more inches of flint clay. A foot of shaly sandstone forms the roof above which is 6 feet more of sandstone.

MACINTOSH CREEK.

On the left, 4 miles up Cutshin creek: Altitude of mouth, 828.

A bench mark on the left at the mouth of the creek is at altitude 835.

The following sections are, one on the left, ⅛ mile up the creek, the former W. D. Wooten entry, and one of Melton Wooten's on the right, ¼ mile up, the main coal seam as measured at the face, 12 yards in, and the remainder at the mouth of the entry:

Fire-clay Coal.

On Left.		On Right.	
Sandstone	10 ft.	Sandstone	6 ft.
Coal	39″	Coal	41″
Flint clay	4″	Flint clay	6″
Coal	6″	Coal	4″
		Black slate	1″
		Coal	9″
		Clay	1 ft.

Altitude, 945. Altitude, 940.

The flint clay parting varies from 4 to 7 inches in thickness in the entry on the left, and the upper coal seam there is mostly a good rich-looking block coal with a little splint and an inch of bone. This description of parting and coal may be applied generally throughout this field, where the coal is of good thickness.

On a left branch, ⅞ mile up the creek, on the right at its mouth, is 8 inches of coal, at altitude 885, under 1½ feet of shale and then 8 feet of sandstone.

On the left, one mile up MacIntosh creek, at its level, is 5 inches of coal, at altitude 905, under 2 feet of black slate, and on the right, 20 feet higher, is 28 inches of coal under 8 feet of shale and then 15 feet of sandstone. These coals are of the Whitesburg bed, that one with black slate covering not being the upper seam of the bed, as is usually assumed to be the case.

On a right branch with mouth at altitude 975, two miles up the creek, on the right at the head of the branch, ½ mile up it, the Feltner heirs have a 10-yard entry with 31 inches of coal, mainly splint, under 5 feet of sandstone, and at altitude 1,320. This is nearly due east from the entries on the creek near its mouth and nearly on the line of strike from them. This coal then is about 380 feet above the lower bed and is consequently of the Flag bed.

LEFT FORK.—On the left, 4 miles up MacIntosh creek: Altitude of mouth, 1,130.

On a right branch, ½ mile up this fork, on the left at the mouth of the branch is the Brewer 6-yard entry in which is the following section, the bottom 9 inches not seen on account of water and mud:

Hazard Coal.

Shale	8 ft.
Coal	2″
Clay	12″
Coal	4″
Bituminous shale	2″
Block coal	36″ or more

Altitude, 1240.

The same means of correlation applies here as to the preceding entry and the character of the openings

confirms it. A smooth 10-foot cliff on the left at the forks at altitude about 1,270 may easily be mistaken for the sandstone under the Haddix coal, but no such coal bed as the preceding lies under that sandstone.

An entry into a higher bed, reported to have 4 feet of coal, on the upper bench beyond the Brewer entry, was not found.

On the right of a left drain, 4½ miles up Cutshin creek, a 15-yard entry into the Fire-clay coal, has, 3 yards in, 43 inches of coal on flint clay and under 3 feet of shale and then 5 feet of sandstone. Its altitude is 935.

On a right branch, 5⅛ miles up the creek, with mouth at altitude 830, on the right at the mouth of the branch, a 15-yard entry at altitude 955 has 39 inches of coal 5 yards in, a flint clay floor and 15 feet of sandstone covering.

On the left, ⅛ mile up the branch, one seam of the Whitesburg bed has 4 inches of coal, at altitude 875, under 3 feet of shaly sandstone.

On the right, ¼ mile up the branch, Clementina H. Green has a 2-yard entry and opposite it is another having the following sections:

Fire-clay Coal.

Sandstone	5 ft.	Sandstone	8 ft.
Coal	38″	Shaly sandstone	1 ft.
Flint clay	5″	Coal	41″
Coal	?	Hard floor.	
Altitude, 955.		Altitude, 960.	

Cliffs along the branch, probably under the Haddix coal, evidence the southerly rise of strata shown by the altitudes of entries on the branch.

DEEP FORD BRANCH.

On the right, 5¼ miles up Cutshin creek: Altitude of mouth, 830.

On the left, ¼ mile up the branch, 2 yards in a long entry at altitude 970, the Fire-clay coal bed has 40 inches of coal on flint clay and under 5 feet of shale.

The forks of the branch, ¾ mile up, are at altitude 1,200.

On the right, ¼ mile up the right fork, Felix Feltner has a 12-yard wet entry in which is the following bed section:

Hazard Coal.

Sandstone	5 ft.
Shale	3 ft.
Coal	1½ ft.
Black slate	1½ ft.
Coal	2 ft.
Shale	6″
Coal (not seen)	6″

Altitude, 1360.

Assuming a uniform rise of strata on Cutshin creek above Deep Ford branch, southwest to Middle fork below Hyden, the Fire-clay coal is about 360 feet below this entry. Under the entry the top of the cliff under the Haddix coal is exposed at altitude 1,295.

On the right at the head of the left fork, ½ mile up it, a nearly closed entry of Felix Feltner's gives the following:

Hindman Coal.

Sandstone	5 ft.
Shale	12 ft.
Black slate	1 ft.
Coal	1½ ft.
Covered, coal, etc.	3 ft.

Altitude, 1595.

Having here hardly 100 feet of covering the area is small.

On a left branch, 5⅝ miles up Cutshin creek, with mouth at altitude 835, on the right, ¼ mile up the branch, the mouth of a 12-yard entry gives the following section, the upper seam of coal apparently reduced to 31 inches at the face:

Fire-clay Coal.

Sandstone	10 ft.
Coal	38″
Flint clay	5″
Coal	2″

Shale.

Altitude, 945.

On a left branch, 5⅞ miles up the creek, on the left, ⅛ mile up the branch, William Maggard has a 20-yard entry into the Fire-clay coal at altitude 945. At the face of the entry is 42 inches of coal, including 1 inch of black slate. The floor is hard and the covering is 3 feet of sandy shale overlain by 4 feet of sandstone.

On the left, 6½ miles up the creek, Hyden Brewer has a 12-yard entry into the Fire-clay coal at altitude 970, having 39 inches of coal on a hard floor and under 10 feet of sandstone.

On a right branch, 6⅝ miles up the creek, on the right, ⅛ and ¼ mile up, are entries of Israel White's, the former measured at the face, 8 yards in, and the latter at the mouth of a long entry. Their sections follow:

Fire-clay Coal.

One-Eighth Mile.

Sandstone	20 ft.
Shaly sandstone	1½ ft.
Coal	41″

Flint clay.

Altitude, 965.

Quarter Mile.

Sandstone	3 ft.
Shale	1 ft.
Coal	41″
Flint clay	4″
Coal	3″

Soft clay.

Altitude, 965.

FLACKEY BRANCH.

On the right, 5¾ miles up Cutshin creek: Altitude of mouth, 845.

On the left, ⅛ mile up Flackey branch, and on a left branch, ⅝ mile up, on the right at its mouth, at the mouths of 5-yard and 8-yard entries, the following sections were obtained:

Fire-clay Coal.

Sandstone	5 ft.
Coal	2″
Shale	3″
Coal	39″

Flint clay.

Altitude, 965.

Sandstone	2 ft.
Shaly sandstone	3 ft.
Coal	2″
Shale	3″
Coal	44″
Flint clay	7″
Coal	6″

Altitude, 980.

On the left, ¾ mile up Flackey branch, John Pace has a 20-yard entry with the following bed section 4 yards in:

Fire-clay Coal.

Sandstone	3 ft.
Coal	48″
Flint clay	5″
Coal	5″

Altitude, 995.

HYDEN ROAD BRANCH.—On the right, 1 mile up Flackey branch: Altitude of mouth, 920.

On the left of a right drain at the mouth of this branch, Hiram Lewis has an 18-yard entry into the Fire-clay coal, at altitude 995, having, 12 yards in, 45 inches of coal on a hard floor and under 3 feet of sandstone.

On the left, ⅛ mile up this branch, a seam of the Whitesburg bed shows 10 inches of coal at altitude 935.

On the right, ¼ mile up the Road branch, Robert Lewis has an 8-yard entry with the following bed section at its mouth:

Fire-clay Coal.

Shaly sandstone	15 ft.
Coal	50″
Flint clay	7″
Coal	4″

Altitude, 970.

A thin outcrop of the Rider shows in the road above this entry at altitude 1,020.

In a left drain, 1⅛ miles up Flackey branch, at the mouth of a long entry is the following:

Fire-clay Coal.

Sandstone	5 ft.
Shale	5 ft.
Coal	1″
Shale	4″
Coal	43″
Flint clay	6″
Coal	6″

Altitude, 1015.

HART BRANCH.—On the right, 1¾ miles up Flackey branch: Altitude of mouth, 995.

On the left, at the mouth of this branch, the mouth of a long entry gives the following:

Fire-clay Coal.

Massive sandstone	5 ft.
Coal	3″
Shale	17″
Coal	44″
Flint clay.	

Altitude, 1025.

A former incomplete prospect in the hill opposite the mouth of Hart branch gave the following:

Flag Coal.

Massive sandstone.	
Shale and clay	5″
Coal	22″
Shale (with coal) about	18″
Coal. (?)	

Altitude, 1470.

The resemblance of this section to that of the Flag coal of Deep Ford branch suffices for correlation, though the bed appears to be here some 50 feet too high for it and the same amount too near the Hindman coal following. An error in altitude is probable as an equal discrepancy is found on its consideration as of the Francis coal, the only other bed to which it could be referred.

Directly above the preceding the following was opened:

Hindman Coal.

Shale	6 ft.
Coal	18″
Shale (?) and coal	3″
Coal	53″

Altitude, 1570.

The Francis coal lies about 100 feet above the Flag coal, but is known only as a comparatively thin bed. The height of this prospect, 545 feet above the Fire-clay coal, agrees with the interval between that bed and the Hindman as it has been obtained farther north.

On the right of a right branch, 7¼ miles up Cutshin creek, Charles Maggard has a long entry with the following bed section 1 yard in:

Fire-clay Coal.

Sandstone	4 ft.
Coal	3″
Knife-edge parting.	
Coal	40″
Flint clay	5″
Coal	3″
Altitude, 990.	

In a left drain, 7⅜ miles up the creek, on the left, ⅛ mile up the drain, Reuben Maggard has an entry into the Fire-clay coal at altitude 945, having, at its face, 4 yards in, 40 inches of coal, including an inch of black slate 9 inches from the bottom, which is not constant. The floor is flint clay and the roof sandstone.

JOE LEWIS (MAGGARD) BRANCH

On the left, 7⅞ miles up the creek: Altitude of mouth, 850.

On the left, ¼ mile up the branch and on the right, ⅜ mile up it, Reuben Maggard has entries of the following sections, the former 2 yards in a 10-yard entry, the latter at the face 4 yards in:

Fire-clay Coal.

On Left.		On Right.	
Sandstone	15 ft.	Shaly sandstone	8 ft.
Coal	46″	Shale	5 ft.
Flint clay	5″	Coal	47″
Coal	4″	Flint clay.	
Altitude, 950.		Altitude, 940.	

Early investigation in this close vicinity gave the following section to which names of beds are now attached:

Section.

Sandstone	15 ft.	
Coal (Flag), nearly	3 ft.	Altitude, 1350
Sandstone	110 ft.	
Shale	12″	
Coal (Hazard upper split)	7″	Altitude, 1220
Clay.		
Sandstone	10 ft.	
Coal stain	9″	
Clay (Hazard lower split)	17″	
Coal stain	3″	
Clay	12″	Altitude, 1190
Sandstone	10 ft.	
Coal, shale and clay (Hamlin)	16″	Altitude, 1045
Sandstone	10 ft.	
Shale	10 ft.	
Coal (Rider)	1 ft.	Altitude, 970
Sandstone	15 ft.	
Coal (Fire-clay)	51″	Altitude, 940
Shale	2″	
Black slate	20″	
Coal (Whitesburg top)	11″	Altitude, 885
Clay.		

The intervals from the Hamlin coal down are about normal, that between the Hazard and Flag coals greater than usual, due to a thickening of the sandstone between them.

My sample of the 51 inches of Fire-clay coal taken from solid outcrop at John C. Lewis' yielded the following results to analysis:

Fire-clay Coal.

Laboratory No. 2535.

Moisture	2.00
Volatile combustible matter	31.00
Fixed carbon	59.94
Ash (nearly white)	7.06
	100.00
Sulphur	0.665
Coke (spongy)	67.00
Specific gravity	1.319

"A portion of the sample is in pure-looking pitch-black fragments, breaking irregularly, with shining surfaces; another portion is dull black and irreguarly laminated. Very little fibrous coal and no pyrites apparent. * * * A weathered sample as its considerable proportion of moisture indicates. No doubt it gives more ash than will be found in the unweathered coal."

The Whitesburg coal shows in outcrop on the left, 8¼ miles up the creek, again 11 inches thick, but without the black slate covering, in its place being 5 feet of sandstone. Its altitude is 875.

MEETING-HOUSE BRANCH.

On the left, 8⅜ miles up Cutshin creek: Altitude of mouth, 852.

On the right, at the mouth of the branch is the following exposure:

Whitesburg Coal (in part).

Shaly sandstone	4 ft.
Coal	8″
Shale and shaly sandstone	12 ft.
Black slate	6″
Coal	3″

Altitude (lower coal), 860.

On the right, ⅛ mile up the branch, A. L. Brewer has an 8-yard entry into the Fire-clay coal at altitude 940, giving under 8 feet of sandstone, 44 inches of coal

5 yards in. Hyden Thomas has an 8-yard entry into the same bed, at altitude 920 on the left, ¼ mile up the branch, with 37 inches of coal half way in an 8-yard entry under 12 feet of sandstone. A roll accounting for the difference of these altitudes is shown by the strata exposed on the left between these two entries.

On the right, ½ mile up, Reuben Maggard has a 5-yard entry into the same bed, at altitude 930, with 41 inches of coal at its face. It has a flint clay floor and 8 feet of sandstone covering exposed.

On the right, ⅝ mile up, the Napier heirs have a 2-yard entry into the same bed at altitude 930, with 48 inches of coal at its face, a hard floor and 6 inches of shale roof under 3 feet of sandstone.

On the left at the branch, ¾ mile up it, the face of an 8-yard entry gives the following bed section:

Fire-clay Coal.

Massive sandstone	8 ft.
Coal	47″
Flint clay	6″
Coal	2″

Clay.

Altitude, 940.

On the right, 8½ miles up the creek, William Wooten has a 20-yard entry into the Fire-clay coal at altitude 950, having, 4-yards in, 42 inches of coal on flint clay and under 8 feet of massive sandstone. The entry is driven 4 yards wide.

BREWER BRANCH.

On the right, 8¾ miles up Cutshin creek: Altitude of mouth, 855.

On the right, ¼ mile up the branch, 5 feet above it, the Napier heirs have a 12-yard entry of the following bed section half way in. The entry is 8 yards wide without posts and without fall of roof.

Fire-clay Coal.

Sandstone	25 ft.
Coal	45″
Flint clay	6″
Coal	4″
Fire-clay	1 ft.
Shale	1 ft.
Sandstone.	

At the head of the left fork of the branch, ¾ mile from its mouth, a closed prospect with perhaps 1½ feet of coal, mostly splint, under 1 foot of laminated sandstone and then 2 feet of shale is, at altitude 1,305, probably of the Flag bed.

The former J. C. Brewer opening in this vicinity gave the following bed section, 80 feet above Cutshin creek:

Fire-clay Coal.

Sandstone.	
Coal	39″
Flint clay	5″
Coal	5″

On the left, 9¼ miles up the creek, an 8-yard entry into the Fire-clay coal, at altitude 925, has 47 inches of coal, the bottom foot not seen, under 25 feet of sandstone.

WOOTEN CREEK.

On the left, 10 miles up Cutshin creek: Altitude of mouth, 865.

PRESTON BRANCH.—On the left at the mouth of Wooten creek: Altitude of mouth, 870.

A bench mark on the left, ⅛ mile up the branch, on the left of the road just above its forks is at altitude 874.

Above the bench mark Felix Farmer has a 15-yard entry into the Fire-clay coal, at altitude 935, having 51 inches of coal 1 yard in. This lies on about 6 inches of flint clay and under 10 feet of sandstone.

On the left, ⅛ mile up the branch, is 17 inches of coal, the upper seam of the Whitesburg bed, at altitude 875, under 2½ feet of black slate and then 15 feet of sandstone.

On the right, ⅜ mile, ½ mile and ⅝ mile up the branch, are 10 to 15-yard entries into the Fire-clay coal at altitude 935, having 47 to 49 inches of coal 1 yard in and the upper one with 49 inches 7 yards in. That and the lower one belong to F. M. Sackett, the middle one to H. W. Hoskins. At least two of them have hard floors and all have 3 to 5 feet of sandstone exposed over the coal.

On the right, 1¼ miles up and at the branch, a closed prospect, reported to have 18 inches of coal, is probably of the Hamlin bed, at altitude 1,075.

On the right, 1¾ miles up the branch, Russell Begley has a long entry of the following bed section 1 yard in:

Flag Coal.

Sandstone	12 ft.
Splint coal	8″
Shale	3″
Coal	31″
Altitude, 1320.	

On the left, below the road, 1¾ miles up the branch, a closed prospect gives the same bed, at altitude 1,325. The gap, ⅛ mile farther up is at altitude 1,338.

LEAD MINE BRANCH.—On the left, ½ mile up Wooten creek; Altitude of mouth, 880.

On the left, ⅛ mile up this branch, the face of a 5-yard entry into the Fire-clay coal, at altitude 970, has 34 inches of coal. The floor is of flint clay and covering of sandstone.

LOONEY BRANCH.—On the left, ¾ mile up Wooten creek: Altitude of mouth, 885.

In the branch, ⅛ mile up, 2 inches of coal of the Whitesburg bed shows, at altitude 905, under shaly sandstone.

On the right, ¼ mile up the branch, D. C. Minton has a 6-yard entry into the Fire-clay coal, at altitude

970. Half way in the coal is 46 inches thick on flint clay and under 3 feet of shaly sandstone.

On a right branch, 1⅛ mile up Wooten creek, on the left at its mouth, a 15-yard entry has the following bed section half way in:

Fire-clay Coal.

Sandstone	2 ft.
Coal	11″
Black slate	1″
Coal	41″
Hard floor	

Altitude, 960.

On the right, 1½ miles up the creek, Henry Baker has an 8-yard entry with the following bed section at its face:

Fire-clay Coal.

Shaly sandstone	5 ft.
Coal	18″
Black slate	2″
Coal	31″
Flint clay	4″
Coal	2″
Clay.	

Altitude, 965.

DAN'S FORK (JIM BRANCH).—On the right, 1¾ miles up Wooten creek: Altitude of mouth, 915.

Of a row of a dozen entries of Minter Bailey's, on the left, ¼ mile up this fork, none were in condition to measure fully when recently seen, but an earlier visit gave the following section, probably near the outcrop:

Fire-clay Coal.

Sandstone	15 ft.
Coal	22″
Black slate	7″
Coal	15″
Shale	1″
Coal	14″
Flint clay	5″
Coal	4″

Altitude, 965.

At the face of the entry nearest the main creek, 8 yards in, both partings above the flint clay now show as black slate, the lower one 6 inches thick, and with 18 inches of coal between the two.

THE RIGHT FORK.—½ mile up Dans fork, has an altitude at its mouth of 965.

On the right, ¼ mile up this fork, 5 feet above it, J. H. Shepard has a 4-yard entry in which the following bed section was obtained:

Hamlin Coal.

Shale	5 ft.
Shaly sandstone	5 ft.
Coal	13″
Clay	6 to 10″
Coal	18″
Shale.	

Altitude, 1060.

On a right branch, ⅝ mile up this right fork, with mouth at altitude 1,100, on the right of its left head, ½ mile up the branch John M. Melton has a 6-yard entry into the Hindman coal, at altitude 1,585, having, under 5 feet of shale, 75 inches of coal as measured 2 yards in. The bottom foot or more is splint coal. There is enough area for mining the coal here, as it has about 200 feet of covering, if it was more easily accessible, but its height makes it rather unattractive. The top of a 15-foot cliff below, at Mr. Melton's house, altitude 1,300, is probably about the level of the Hazard coal. A very broad bench is 25 feet lower.

At Arch Joseph's house, 1⅛ miles up the right fork, this bench is again very broad, its altitude, as obtained, 1,270.

On the left, 1¼ miles up the right fork, Mr. Joseph has a 5-yard entry into the Hindman coal, at altitude 1,590. It shows at its mouth about 6½ feet of coal, the lower 2 feet splint, in the middle of which is 2 inches somewhat slaty. On the bed is 8 feet of shale.

These two openings show the Hindman coal in what is regarded as its typical condition, being on a broad bench, under heavy shale covering and with its thick coal without parting.

Strata rise from the Fire-clay coal entries near the mouth of Dan's fork to the Joseph entry, probably about 40 feet, as indicated by openings in line on Pauls creek near its mouth. The interval between the Hindman and the Fire-clay coals is then about 585 feet.

On the right, 2⅜ miles up Wooten creek, John L. Turner has a 15-yard entry with coal still soft and muddy at its face. Its bed section follows.

On the left, 2¾ miles up the creek, Henry Baker has a 10-yard entry. The bed sections of these two entries follow, as measured at their faces:

Fire-clay Coal.

Turner.		Baker.	
Shale	2 ft.	Sandstone	8 ft.
Coal	17″	Coal	17″
Shale	1″ to 3″	Knife-edge parting.	
Coal	24″	Coal	28″
Altitude, 980.		Flint clay.	
		Altitude, 970.	

The Turner coal might well be correlated as the Rider, but for the similarity of the two sections and certainty as to the Baker coal.

It was probably at the Baker entry that an earlier visit found an outcrop 51 inches of coal on 6 inches of flint clay and 9 inches of coal below that.

BROWNING FORK.—On the right, 2¾ miles up Wooten creek: Altitude of mouth, 950.

On a right branch with mouth at altitude 1,080, 2 miles up this fork, on the left, ¾ miles up the branch and 10 feet above it, Enoch Gilbert has a 2-yard entry into the Hazard bed, or a part of it, at altitude 1,305. It has 17 inches of coal under 4 feet of sandstone.

GOOD FORK.—On the left, 2¼ miles up Browning fork: Altitude of mouth, 1,120.

Thirty yards to the right of the gap at the head of Good fork, ¾ mile up it, the face of a 10-yard entry into the Hindman bed, at altitude 1,560, is 6 feet thick, apparently all coal, but too much weathered to assure it.

In the mouth of a right branch, 3⅛ miles up Wooten creek, a 1-yard entry has the following bed section:

Fire-clay Coal.

Sandstone	5 ft.
Coal	33″
Flint clay	7″
Coal	1″
Shale.	
Altitude, 980.	

CANE BRANCH.—On the left, 3¼ miles up Wooten creek: Altitude of mouth, 980.

On the right, 1½ miles up the branch, on its right fork, a coal, reported thick, has been opened on a good bench at altitude 1,340. The coal was completely covered when visited and the prospect indicated only thin coal, probably of the Flag bed.

On the left, just above the mouth of Cane branch, John R. Henderson has a 12-yard entry with the following bed section at its face:

Fire-clay Coal.

Sandstone	12 ft.
Coal	11″
Shale	6″
Coal	30″
Hard floor.	
Altitude, 985.	

POLECAT BRANCH.—On the left, 4¼ miles up Wooten creek: Altitude of mouth, 1,020.

On the left, ⅛ mile up the branch, William Henderson has a closed entry with the following section at its mouth:

Hazard Coal.

Sandstone	4 ft.
Coal	2″
Shale	7″
Coal	24″
Shale	3″
Coal	27″
Clay	5″
Coal about	9″
Altitude, 1250.	

On a right branch, ¼ mile up Polecat branch, on the left, ⅛ mile up the right branch, Jack Melton has a 5-yard entry with the following bed section at its face:

Fire-clay Coal Rider.

Massive sandstone	6 ft.
Coal	2″
Shale	?
Coal	23″
Clay	1″
Coal	15″
Shale	3″
Coal	3″
Knife-edge parting.	
Coal	13″
Shale	3″
Coal	12″
Fire-clay.	
Altitude, 1050.	

On the right, ⅝ mile up Polecat branch, a former prospect into the Haddix bed at altitude 1,195, yielded cannel coal, but the bed is probably thin there.

Above that prospect William Melton has a 12-yard entry with the following bed section 2 yards in, the bottom 8 inches in water and not seen:

Hazard Coal.

Massive sandstone	12 ft.
Shale	2″
Coal	2″
Shale	7″
Coal	38″
Black slate	4″
Coal	24″
Altitude, 1235.	

On a right branch, ⅞ mile up Polecat branch (left fork), on the left, ⅛ mile up the right branch, Mrs. Vanover has a stripping of the following section:

Flag Coal.

Sandstone	20 ft.
Shale	2 ft.
Coal	15″
Semi-cannel coal	13″
Coal	8″
Altitude, 1315.	

The interval between the Haddix and Hazard beds here is about half of what was to be expected and the latter would seem to be in the place of the Young coal, but for its thickness and the recent discovery of the Flag coal in its somewhat characteristic condition.

LAUREL FORK.—On the right, 5¾ miles up Wooten creek: Altitude of mouth, 1,120.

On a left branch, ¼ mile up this fork, ¼ mile up the branch and on the left, ⅛ mile up a right hollow, Robert Caudill has a 6-yard entry into the Hindman coal at altitude 1,580. Under shale, it is 64 inches thick, or more, without parting unless in the lower 6 inches which was hidden.

On the right of a left hollow at its mouth, 6¾ miles up Wooten creek, about 15 feet above it, a prospect gives the following section:

Hazard (?) Coal.

Coal	4″
Clay with coal about	12″
Coal	14″
Altitude, 1305.	

On the left, 10½ miles up Cutshin creek, Samuel Lewis has a 15-yard entry into the Fire-clay coal, at altitude 920, having 52 inches of coal at its face, about 4 inches of flint clay parting and 4 inches of coal reported beneath it, the bed overlain by 15 feet of shale.

On a right branch, 10⅜ miles up the creek, on the right, ⅛ mile up the branch, a 6-yard entry into the same bed, at altitude 925, has 50 inches of coal, 2 yards in, on a flint clay floor and under 6 feet of sandstone.

On the left, at the road, 10½ miles up the creek, a 12-yard entry into the same bed, at altitude 915, has 53 inches of coal on flint clay and under 5 feet of sandstone.

FORD BRANCH.

On the right, 10¾ miles up Cutshin creek: Altitude of mouth, 870.

On the left, ⅛ mile up the branch, is an abandoned entry giving the following bed section 2 yards in, the bottom foot not seen:

Fire-clay Coal Rider. (?)

Shaly sandstone	5 ft.
Coal	5″
Shale	1″
Coal	1″
Shale	11″
Coal about	30″

Altitude, 945.

On the right, 10⅞ miles up the creek, H. A. Lewis has a 12-yard entry into the Fire-clay coal, at altitude 930, having, 5 yards in, 45 inches of coal on a hard floor and under 3 feet of laminated sandstone.

POUND MILL BRANCH.

On the right, 11 miles up Cutshin creek: Altitude of mouth, 875.

On the right, at the mouth of the branch, Judge Dickson has an 8-yard entry with a following bed section at its face.

On the left, ¼ mile up the branch, H. A. Lewis has a 25-yard entry with the following bed section at its face. the parting decreased from 8 inches at the mouth of the entry:

Fire-clay Coal.

Dickson.		Lewis.	
Sandstone	8 ft.	Sandstone	4 ft.
Coal	12″	Coal	10″
Shale	1″	Shale	3″
Coal	36″	Coal	35″
Hard floor.		Hard floor.	
Altitude, 970.		Altitude, 1000.	

In a right drain, 11¼ miles up Cutshin creek, the following shows in outcrop:

On a left branch, 11¼ miles up, on the right, ⅛ mile up the branch, Ellen Creech has a 15-yard entry with bed section, 4 yards in. the flint clay and coal under it given as reported:

Fire-clay Coal.

Outcrop On Right.		Entry On Left.	
Sandstone	10 ft.	Sandstone	3 ft.
Coal	21″	Shaly sandstone	5 ft.
Shale (with coal)	5″	Coal	4″
Coal about	38″	Shale	10″
Flint clay	5″	Coal	48″
Coal	8″	Flint clay	6″
Altitude, 955.		Coal	4″
		Altitude, 935.	

SAW BRANCH.

On the left, 11⅝ miles up Cutshin creek: Altitude of mouth, 875.

In a left drain, ⅛ mile up the branch, on the left at the mouth of the drain, Elijah Howard has a 2-yard entry in which is the following bed section:

Fire-clay Coal.

Sandstone	2 ft.
Coal	15″
Shale (with coal)	8″
Coal	34″
Flint clay.	
Altitude, 925	

In a left drain, 12 miles up Cutshin creek, Isaac Howard has a long entry into the Fire-clay coal, at altitude 950, showing under 5 feet of shale, ½ inch of coal, a parting of 2 inches and the main part of the bed beneath, over 3½ feet thick.

On a right branch, 12 miles up the creek, on the right at the mouth of the branch, William Stedham has a long entry with the following bed section 4 yards in:

Fire-clay Coal.

Massive sandstone ....15 ft.
Clay ..... 1″
Coal .....34″
Flint clay ..... 5″
Coal ..... 7″
Clay.
Altitude, 950.

On the left at the road, 12⅛ miles up the creek, 10 inches of coal in outcrop under shale is of the Whitesburg bed, at altitude 910.

On a right branch, 12¼ miles up the creek, on the left, ⅛ mile up the branch, Stokeley Bowling has an 8-yard entry of bed section, 1 yard in, following.

On a left drain, 12¼ miles up the creek, Wilson Cornett has a long entry with bed section, 1 yard in, following:

Fire-clay Coal.

Bowling.

Shaly sandstone ..... 3 ft.
Shale ..... 2″
Coal .....32″
Flint clay.
Altitude, 990.

Cornett.

Sandstone ..... 3 ft.
Coal .....⅛″
Shale ..... 2″
Coal .....35″
Hard floor.
Altitude, 980.

On the left, 12⅜ miles up the creek, Wilson Cornett has a 1-yard entry in which is the following bed section:

Fire-clay Coal.

Shaly sandstone ..... 5 ft.
Shale ..... 3″
Coal .....33″
Flint clay ..... 6″
Coal ..... 5″
Clay.
Altitude, 980.

This series of openings from Pound Mill branch up, give an interesting exhibit of the introduction of a parting above the flint clay, the reduction and final extinction of the top coal, with the parting continuous nevertheless.

DICKSON (DIXON) BRANCH.

On the right, 12⅝ miles up Cutshin creek: Altitude of mouth, 885.

On the left, at the mouth of this branch, John Miniard has a 15-yard entry of the following bed section 1 yard in:

Fire-clay Coal.

Sandstone.
Shale ..... 2½ ft.
Coal ..... 1″
Shale ..... 2″
Coal .....34″
Flint clay ..... 8″
Coal ..... ?
Altitude, 1005.

An outcrop on the right, by the road, ⅛ mile up the branch, shows 11 inches of coal under black slate, apparently a low seam of the Whitesburg bed, at altitude 935.

On a right drain, ¼ mile up the branch, on the left at the mouth of the drain, Jones and Dickson have a 10-yard entry with the following section at its mouth:

Fire-clay Coal.

Sandstone ..... 5 ft.
Coal ..... 1″
Shale ..... 2″
Coal .....32″
Flint clay ..... 3″
Coal ..... 3″
Clay.
Altitude, 1010.

On the left, 12¾ miles up Cutshin creek, John Miniard has a 15-yard entry with the following bed section 3 yards in:

Fire-clay Coal.

Sandstone ..... 5 ft.
Shaly sandstone ..... 3 ft.
Shale ..... 3″
Coal .....34″
Flint clay ..... 5″
Coal about .....12″
Altitude, 1005.

A bench mark on the right just below the mouth of Coon creek, is at altitude 894.

COON (RACCOON) CREEK.

On the right, 13 miles up Cutshin creek: Altitude of mouth, 890.

On the right, ¾ mile up Coon creek, F. H. Hensley has a long entry into the Fire-clay coal, at altitude 1,045. At 2 yards in there is 29 inches of coal on a hard floor and under 8 feet of argillaceous sandstone.

MILL BRANCH.—On the right, ¾ mile up Coon creek: Altitude of mouth, 920.

In the point of the hill on the right of this branch at its mouth, flint clay with coal stain next above and below it outcrops 50 yards from the preceding entry and at altitude 1,040.

On the right, ¼ mile up the branch, 10 feet above it, F. H. Hensley has a closed entry with the following section 1 yard in:

Fire-clay Coal Rider.

Clay	1 ft.
Coal	½″
Shale	9″
Coal	1″
Clay	2″
Coal	33″
Clay	1″
Coal	12″

Altitude, 1070.

On a left branch, 1⅛ miles up Coon creek, on the right, ⅛ mile up the branch, Simon Hensley has a 12-yard entry with the following bed section 4 yards in:

Fire-clay Coal Rider.

Shaly sandstone	12 ft.
Coal	34″
Clay	1″
Coal	12″

Clay.

Altitude, 1075.

BIG BRANCH.—On the right, 1½ miles up Coon creek: Altitude of mouth, 945.

The following is exposed in and by the branch, ¼ mile up it:

Whitesburg Coal.

Sandstone	20 ft.
Black slate	3″
Coal	11″
Shale	6″
Coal	1″
Shale	3″
Coal	1″

Clay.

Altitude, 970.

On the left, ¼ mile up the branch, the face of a 2-yard entry gives a following bed section:

On a left branch, ⅜ mile up Big branch, on the right, ⅛ mile up the left branch, a 10-yard entry gives a following bed section, 3 yards in, the bottom foot not seen and probably including a thin parting:

Fire-clay Coal Rider.

¼ Mile Up.		⅜ Mile Up.	
Shale	8 ft.	Shale	3 ft.
Coal	4″	Coal	3″
Shale	11″	Clay and shale	5 ft.
Coal	1″	Coal (and parting?)	41″
Shale	4″	Clay.	
Coal	32″	Altitude, 1065.	
Shale	1″		
Coal	8″		

Altitude, 1060.

On a left branch with mouth at altitude 957, and 2¾ miles up Coon creek, on the left of its left branch, ⅛ mile up both left branches and at the level of the latter, are the following outcrops:

Rider.

Shaly sandstone	10 ft.
Shale	18″
Coal	3″
Shale	1″
Coal	6″
Clay	4 ft.
Coal	6″ or more

Altitude, 1080.

Fire-clay Coal.

Shaly sandstone	10 ft.
Shale	3 ft.
Coal	14″
Flint clay	5″
Clay	2 ft.

Altitude, 1030.

On the right, ¼ mile up the main left branch (or ⅛ mile up the right fork), C. Maggard has a stripping with the following section:

Fire-clay Coal Rider.

Shaly sandstone.	
Shale	1 ft.
Coal	7″
Shale	6″
Coal	32″
Clay	1″
Coal about	6″

Altitude, 1060.

On the right, 2¾ miles up Coon creek, 1 yard in a 15-yard entry and again on the right, 3¼ miles up the creek, 1 yard in R. D. Maggard's wet entry are the following bed sections:

Fire-clay Coal Rider.

2¾ Miles Up.

Massive sandstone	6 ft.
Coal	34″
Clay	1″
Coal	10″

Altitude, 1085.

3¼ Miles Up.

Shale	2 ft.
Coal	34″
Clay	1″
Coal	8″

Altitude, 1090.

On the left, 3½ miles up Coon creek (above Wolf creek, notes of which are given after those of Coon creek), the Maggard heirs have a wet entry giving at its mouth the following section, the bottom foot not seen.

On a left branch with mouth at altitude 995, and 3¾ miles up Coon creek the Pennington heirs have a wet entry with the section at its mouth following:

Fire-clay Coal Rider.

Maggard.

Shaly sandstone	8 ft.
Shale	4″
Coal	5″
Shale	17″
Coal	2″
Clay	1″
Coal	3½ ft.

Altitude, 1105.

Pennington.

Shale	3 ft.
Coal	7″
Shale	22″
Sandstone	8″
Coal bed	3½ or 4 ft.

Altitude, 1130.

TRACE BRANCH.—On the right, 4¼ miles up Coon creek: Altitude of mouth, 1,038.

A bench mark on the right at the mouth of the branch is at altitude 1,038.

In a right drain, ⅛ mile up the branch, 1 yard in a 12-yard entry is 31 inches of coal on a soft clay floor and under massive sandstone. It is, with little question, of the Fire-clay coal bed at altitude 1,105.

An outcrop on the right, 4⅜ miles up the creek, the upper seam of coal crushed and a probability that other seams of the bed are not exposed, gives the following section:

Whitesburg Coal.

Sandstone.	
Coal	3″
Clay	1 ft.
Shale	3 ft.
Sandstone	1 ft.
Shale	3 ft.
Coal	3″
Shale to creek	6 ft.

Altitude (lower coal), 1050.

On the left, 4½ miles up the creek, a 6-yard entry gives the following section approximately:

Fire-clay Coal.

Shale.
Coal ..... 5″
Shale ..... 18″
Coal ..... 2″
Shale ..... 8″
Coal ..... 20″
Altitude, 1100.

On the left, 5 miles up Coon creek, and 5 feet above it, a stripping gives the following:

Fire-clay Coal.

Shale ..... 5 ft.
Sandstone ..... 1½ ft.
Coal ..... 16″
Shale (with coal) ..... 8″ to 10″
Coal ..... 9″
Clay.
Altitude, 1145.

About 5½ miles up the creek, a former prospect, gave the following:

Fire-clay Coal.

Sandstone.
Coal ..... 17″
Parting ..... 2″
Coal ..... 20″
Parting ..... 3″
Coal ..... 10″
Altitude, 1160.

Neither parting is of flint clay. The lack of interest in coal of the early inhabitants of the vicinity is shown by the fact that this opening made by an employee of the survey in 1886, near the creek and easy of access is now unknown, else it would be gladly utilized.

On the left by the road, 6¼ miles up Coon creek, the following shows in outcrop:

Fire-clay Coal.

Shaly sandstone ..... 5 ft.
Coal ..... 7″
Clay ..... 2″
Coal ..... 3″
Altitude, 1190.

About 6½ miles up the creek another now lost prospect gave the following:

Fire-clay Coal Rider.

Shale and sandstone..30 ft.
Coal ..... 3″
Parting ..... 10″
Coal ..... 10″
Parting ..... 3″
Coal ..... 2″
Parting ..... 2″
Coal ..... 11″
Parting ..... 25″
Coal ..... 3″
Altitude, 1250.

On the right, 7¼ miles up Coon creek, Jerry Bledsoe has a 4-yard entry with the following bed section at its face:

Hazard Coal.

Sandstone ..... 3 ft.
Coal ..... 13″
Shale ..... 5″
Coal ..... 2″
Shale ..... 3″
Coal ..... 23″
Clay.
Altitude, 1425.

A bench mark on the right of the forks of the road, 8 miles up the creek, is at altitude 1,473. The opening of the valley there marks the top of the sandstone on which lies the Flag bed.

WOLF CREEK.—On the left, 3½ miles up Coon creek: Altitude of mouth, 985.

On the right, ⅞ miles up this creek, is an abandoned long entry into the Fire-clay coal Rider at altitude 1,115.

On the left, 1⅛ mile up the creek, Abner Lewis (formerly Christopher) has a 4-yard entry into the Fire-

clay coal at altitude 1,075. The bed gives here 19 inches of splint coal, part of it gray, on shale and under 4 feet of sandstone, the lower half shaly.

A recent prospect on the right, 1¼ miles up the creek, shows the Fire-clay coal at altitude 1,060, with 15 inches of coal under 4 feet of laminated sandstone, then 2 feet of shale containing five knife-edges of coal and five feet of sandstone above.

Early prospecting developed the following:

1¼ Miles Up the Creek.

Coal stain		3″
	(Flag)	
Cannel coal		9″

Altitude, 1470.

Shale		3 ft.
Coal		12″
Shale	(Hazard upper split)	3″
Coal		25″

Altitude, 1355.

Coal with 2″ parting (Hazard lower split) ..... 15″

Altitude, 1325.

Sandstone		3 ft.
Coal with 1″ parting		4″

Altitude, 1215.

Sandstone		2 ft.
Black slate		8″
Coal		5″
Clay		3″
Coal		2″
Shale	(Hamlin)	4 ft.
Coal		9″
Shale		2″
Coal		3″

Altitude, 1170.

Sandstone		20 ft.
Shale		2 ft.
Coal		6″
Shale	(Rider)	8″
Coal		4″

Altitude, 1105.

Sandstone		6 ft.
Shale		3 ft.
Coal (Fire-clay)		19″

Altitude, 1070.

PETER BRANCH.—On the right, 2¾ miles up Wolf creek: Altitude of mouth, 1,130.

A stripping on the left, ¼ mile up the branch, gives the following section:

Hamlin (?) Coal.

Black slate and shale	5 ft.
Coal	4″
Shale	11″
Coal (and thin parting) about	15″

Altitude, 1230.

The correlation can only be conjectured with the limited knowledge acquired.

On the left, ¾ mile up the branch and 10 feet above it in a 1-yard entry, the following bed section was obtained.

Hazard Coal.

Shaly sandstone	2 ft.
Shale	3 ft.
Coal	6″
Shale	5″
Coal	27″
Clay.	

Altitude, 1405.

DOUBLE ROCK BRANCH.—On the left, 3¼ miles up Wolf creek: Altitude of mouth, 1,190.

On the left, ⅛ mile up the branch, in a rockhouse, what appears to be the Hamlin coal is at altitude 1,280. The coal is 11 inches thick with a parting of 1 inch additional. Five feet of sandstone is exposed over the coal.

BAKER FORK.—On the right, 4 miles up Wolf creek: Altitude of mouth, 1,290.

GRASSY FORK.—On the left, 1 mile up Baker fork: Altitude of mouth, 1,450.

On a right branch, ¼ mile up this fork, on the left at its mouth a closed entry gives a following section at its

mouth. On the right ¾ mile up Grassy fork, C. B. Causey has a 2-yard entry, its section following:

Hazard Coal.

¼ Mile Up.		¾ Mile Up.	
Shaly sandstone	2 ft.	Sandy shale	5 ft.
Shale	2 ft.	Coal	3″
Coal	8″	Shale	6″
Parting	½″	Coal	18″
Coal	9″	Altitude, 1500.	
Altitude, 1490.			

On the right, 1¼ miles up Grassy fork, 15 feet above it, the face of a 6-yard entry gives the following bed section:

Hazard Coal.

Shaly sandstone	2 ft.
Shale	2 ft.
Coal	11″
Shale	8″
Coal	1″
Shale	7″
Coal	23″
Clay.	
Altitude, 1475.	

A considerable quantity of iron ore is scattered along the road on top of the ridge on the right, 1¾ miles up the fork, at altitude 1,930.

BIG FORK.—On the right, 5⅛ miles up Wolf creek: Altitude of mouth, 1,400.

In the fork, ⅜ mile up at altitude 1,435, is coal reported 18 inches thick.

SHORT FORK.—On the right, 5¾ miles up Wolf creek: Altitude of mouth, 1,460.

On the left, ¼ mile up the branch, Riley Maggard has a 2-yard entry, in which is the following bed section:

Haddix Coal

Sandstone	5 ft.
Shale	5 ft.
Coal	10″
Shale	1″
Coal	4″
Shale	20″
Coal and shale	3″
Semi-cannel coal	33″
Altitude, 1495.	

The bottom coal is in one block. The top coal has been opened 15 feet higher, 100 yards farther down stream and is reported 15 inches thick and of remarkably fine grain, an occasional characteristic of the Haddix coal.

A line of strike is well established running about north 10 degrees west to the entry near the head of Coon creek.

On the left, by the road, 6½ miles up the creek a stripping at altitude 1,510, reported of coal 26 inches thick, is evidently of the same bed as the preceding.

On the right of a left drain, 13⅛ miles up Cutshin creek, a 12-yard entry gives the following bed section 2 yards in:

Fire-clay Coal.

Sandstone.	
Shale	5″
Coal	28″
Flint clay	6″
Coal	6″
Clay.	
Altitude, 1000.	

The top coal measures 31 inches at the face of the entry.

PAUL'S CREEK.

On the left, 14¼ miles up Cutshin creek: Altitude of mouth, 910.

On the left of a right drain, ¼ mile up Paul's creek, a 12-yard entry gives the following bed section at its face:

Fire-clay Coal.

Sandy shale	6 ft.
Coal	24″
Clay	7″
Coal	11″
Black slate	12″
Clay.	
Altitude, 990.	

Closed prospects on the right, ¼ and ½ mile up the creek, give the altitude of the Rider at 1,070 and 1,050. The dump of the former indicates considerable coal.

Under the latter is the following in outcrop 10 feet above the creek:

Whitesburg Coal.

Sandstone	5 ft.
Coal	4″
Fire-clay	8″
Shale	2 ft.
Coal	3″
Black slate	4″
Altitude, 940.	

On a right branch, ⅞ mile up Paul's creek, with mouth at altitude 945, on the left, ¼ mile up the branch, a prospect, under shaly sandstone, said to have 1 foot of coal, at altitude 1,150. This is of the Hamlin bed.

On the right, ⅜ mile up the branch, James Lewis has a 10-yard entry of the following bed section 2 yards in:

Hazard Coal.

Sandstone.	
Shale	1 ft.
Coal	2″
Shale and clay	8 ft.
Coal	9″
Shale (with coal ½″)	19″
Coal	21″
Black slate	5″
Clay	1½ ft.
Altitude, 1295.	

On the left, ⅞ mile up Paul's creek, in the point of a hill opposite the preceding branch, William Dickson has a wet entry with the following section at its mouth:

Fire-clay Coal.

Sandstone	20 ft.
Shaly sandstone	3 ft.
Coal	26″
Hard clay	3″
Soft clay	3″
Coal	?
Altitude, 1025.	

The bed can hardly be classed as workable here.

An outcrop on the right at creek level, 1¼ miles up it, gives the following:

Whitesburg Coal.

Sandstone	20 ft.
Coal	5″ to 9″
Shale	5″
Coal	2″
Shale	2″
Coal	1″
Clay	4″
Sandstone.	
Altitude, 975.	

On a left branch, 1⅜ miles up the creek, on the right at the mouth of the branch, Jonathan Hart has an 8-yard entry with the following bed section 3 yards in:

Fire-clay Coal.

Sandstone.	
Shaly sandstone	2 ft.
Coal	29″
Hard clay	6″
Coal about	5″
Altitude, 1020.	

DICK BRANCH.—On the left, 1½ miles up Paul's creek: Altitude of mouth, 980.

On the right at the mouth of the branch, Henry Day has a 15-yard entry with the following bed section at its face.

On the right, 1⅝ miles up Paul's creek, Mr. Day has an 8-yard entry, its bed section at the face also following:

Fire-clay Coal.

Dick Branch.		Paul's Creek.	
Sandstone	3 ft.	Sandstone.	
Coal	30″	Coal	30″
Clay	5″	Pyrite	5″
Coal	8″	Coal	6″
Altitude, 1020.		Shale	2″
		Coal	1″
		Altitude, 1040.	

DAY (JIM) BRANCH.—On the right, 1¾ miles up Paul's creek: Altitude of mouth, 990.

The following approximate section is in outcrop in the branch at its mouth:

Whitesburg Coal.

Shale	1 ft.
Coal	4″
Shale	2 ft.
Coal	3″
Shale	5″
Clay.	
Altitude, 995.	

LICK FORK.—On the right, 2 miles up Paul's creek: Altitude of mouth, 995.

On the left at the mouth of the fork an outcrop of 4 inches of coal under 2 feet of black slate, at altitude 1,000, is probably the top of the Whitesburg bed.

On the left, ¼ mile up the fork, Hardy Williams has a 15-yard entry with the following bed section 2 yards in:

Fire-clay Coal.

Sandstone	2 ft.
Coal	30″
Flint clay	6″
Coal	5″
Clay.	
Altitude, 1030.	

The flint clay is hard at the top and soft at the bottom, corresponding with the clay of the Dickson entry,

a mile down the creek, but which does not appear as flint clay.

Lick fork has forks, ⅜ mile up, at altitude 1,025. Thence up the right fork, ⅞ mile to its forks, at altitude 1,310. In the point of the hill between these forks is an opening with the following section:

Hazard Coal.

Massive sandstone	20 ft.
Shaly sandstone	3 ft.
Coal	2″
Black slate	3″
Coal	3″
Clay	4 ft.
Coal	21″
Altitude, 1355.	

In a right drain, ¼ mile up the second left fork here, is a prospect, under 2 feet of sandstone, said to have 3 feet of coal with a parting of 4 inches 1 foot from the top. This is in the Francis bed, at altitude 1,560.

In the same drain is a 2-yard entry with coal reported 26 inches thick, under shaly sandstone. This is in the Hindman bed, at altitude 1,600.

On the left, ¼ mile up the second right fork (altitude of mouth, 1,310) Gideon Lewis has a closed entry showing a coal stain of 5 to 6 feet close to the top of the flat summit of the hill. This is in the Helton bed, at altitude 1,740.

The last four openings give a close approximation to the actual intervals between beds, and by adding 20 feet to the altitude of the Fire-clay coal (to allow for its rise up the fork) that bed may be included also.

On the right, 2½ miles up Paul's creek, in an 8-yard entry, is the following bed section:

Fire-clay Coal.

Sandstone	4 ft.
Coal	31″
Impure flint clay	5″
Coal	5″
Clay.	
Altitude, 1010.	

This bed reaches creek level, 2⅝ miles up, where a stripping shows 33 inches of coal on a hard bituminous shale floor, at altitude 1,010.

BEAR BRANCH.—On the left, 3⅜ miles up Paul's creek: Altitude of mouth, 1,065.

On the right, at the mouth of the branch, is the following exposure:

Hamlin Coal.

Shale	3 ft.
Coal	3″
Shale	2″
Coal	1″
Clay	2 ft.
Shale	3 ft.
Coal	12″

Altitude, 1085.

Under this coal is 15 feet of shale to the level of the branch. The resemblance of this section to that of the probable Hazard coal of Lick fork is remarkable.

On the left, ¾ mile up the branch, an old prospect into the Haddix bed is at altitude 1,300. The top of a 10-foot cliff about 25 feet higher is probably 30 to 40 feet below the Hazard bed.

On the right of the road gap, 50 feet above it, 1 mile up the branch, James Wells has an opening in which is 69 inches or more of coal, the lower foot in water and not seen. This is of the Hindman bed, at altitude 1,645. It is covered by 4 feet of shale, a thin coal at the top and then 2 feet of laminated sandstone.

On the left, at the road, 3⅜ miles up Paul's creek, a part of the Hamlin bed is exposed, 4 inches of coal with 2 inches of parting, at altitude 1,235.

RIGHT FORK.—On the right, 4¼ miles up Paul's creek: Altitude of mouth, 1,110.

In a right hollow, ¼ mile up this fork and ¼ mile up the hollow, at its head, Ira Wells has an 8-yard entry with about 88 inches of coal, the bottom foot not seen, under 5 feet of sandstone. It is of the Helton bed, at

altitude 1,760. There is but about 100 feet of covering over the bed and its area is small here. Float iron ore was found 10 feet below the entry and 5 feet above a prominent bench.

On a right branch, 4¾ miles up Paul's creek, on the left, ⅛ mile up the branch, William Day has a 4-yard entry with the following bed section at its face:

Hamlin Coal.

Sandstone	1 ft.
Shale	2 ft.
Coal	7″
Black slate and slaty coal	8″
Coal	10″

Clay.

Altitude, 1235.

On the right, 14¼ miles up Cutshin creek, Taylor Sizemore has a 3-yard entry with the following bed section at its face:

Fire-clay Coal.

Laminated sandstone	6 ft.
Sandy shale	2 ft.
Coal	28″
Clay	5″
Coal	22″

Clay.

Altitude, 1065.

This bottom half of the lower coal seam is a hard block coal.

On a left branch, with mouth at altitude 915, 14½ miles up the creek, on the right, ⅛ mile up the branch, Calvin Lewis has a 4-yard entry in which a following approximate bed section was obtained, the lower 2 feet in water.

On a right drain, 14¾ miles up Cutshin creek, on the right, ⅛ mile up the drain, Jefferson Sizemore has a 12-yard entry with a following bed section 3 yards in, the bottom foot in water:

Fire-clay Coal Rider.

C. Lewis.		J. Sizemore.	
Shaly sandstone	6 ft.	Sandy shale	20 ft.
Coal	5″	Clay shale	4″
Shale	2″	Coal	5″
Coal	23″	Clay	5″
Clay	2″	Coal	34″
Coal	24″	Altitude, 1055.	
Clay.			
Altitude, 1040.			

Below the Sizemore entry is a stain of the Fire-clay coal under sandstone and at altitude 1,020.

A former section taken at I. Pennington's in this close vicinity gave the following:

Section.

Coal		4″
Black slate		4″
Sandstone	(Hazard)	30″
Coal		11″
Clay		2 ft.
Altitude, 1300.		
Bastard limestone		6″
Altitude, 1265.		
Coal (Hamlin)		12″
Altitude, 1155.		
Sandstone		15 ft.
Coal		7″
Shale		4″
Coal		29″
Shale	(Rider)	1″
Coal		9″
Shale		1″
Coal		15″
Altitude, 1080.		
Sandstone		10 ft.
Iron ore		2″
Shale		10 ft.
Coal		24″
Flint clay		4″
Coal	(Fire-clay)	5″
Shale		1″
Coal		4″
Black slate		11″
Altitude, 1045.		
Sandstone		60 ft.
Thin coal.		
Sandstone		40 ft.
Altitude, 945.		

The black slate of the Fire-clay coal bed looks so much like cannel coal that a sample of the bed was taken with it included. Analysis gave nearly 40 per cent. ash, proving it worthless.

On the right, 15¼ miles up Cutshin creek, James Sizemore has a closed prospect into the Fire-clay coal, at altitude 1,030, reported to have 3 feet of coal, including a parting.

Above this prospect the Rider has been opened at altitude 1,060, showing now a 4-foot bed.

On the right, 15⅜ miles up the creek, a closed entry into the Rider (?) is at altitude 1,040.

On the right, 15⅜ miles up the creek, Elijah Lewis has a 6-yard entry with the following bed section at its face:

Fire-clay Coal Rider.

Shaly sandstone	5 ft.
Coal	4″
Clay	6″
Black jack	3″
Coal	21″
Clay	1″
Coal	15″
Clay.	
Altitude, 1050.	

On a right branch, 16⅝ miles up Cutshin creek, on the right at the mouth of the branch, John York has a 15-yard entry of the following approximate bed section 2 yards in:

Rider.

Sandstone.	
Shale	4 ft.
Coal	21″
Shale	1″
Coal	22″
Altitude, 1065.	

Water in the entry is odorous of sulphur.

On the left at the road, 16¾ miles up the creek, an outcrop of the Fire-clay coal, apparently, shows 12 inches of coal with shale for a foot below and 6 feet above it.

LEVI LEWIS BRANCH.

On the left, 17⅛ miles up Cutshin creek: Altitude of mouth, 965.

On the right at the mouth of the branch, Levi Lewis has a 15-yard entry of the following bed section half way in:

Fire-clay Coal Rider.

Argillaceous sandstone	3 ft.
Coal	18″
Clay	2″
Coal	27″
Clay.	
Altitude, 1090.	

On the right, 1⅛ miles up the branch, 25 feet above it, in a 2-yard entry in a rockhouse, is the following bed section:

Hazard Coal.

Sandstone	3 ft.
Shale	8″
Coal	3″
Shale	13″
Coal	1″
Black jack	3″
Coal	10″
Shale (with coal)	22″
Coal	24″ or more
Black slate.	
Altitude, 1370.	

On a right branch, 17½ miles up Cutshin creek, altitude of mouth, 975, on the left, ⅛ mile up the branch, John L. Lewis has a wet entry with the following bed section 1 yard in, the bottom foot not seen:

Fire-clay Coal Rider.

Shale	5 ft.
Coal	15″
Shale	1″
Coal	2″
Shale	2″
Coal	22″
Altitude, 1120.	

The following is in outcrop on the left, 17½ miles up the creek:

Whitesburg Coal.

Shale.	
Coal	6″
Shale	5 ft.
Coal, 3 partings	8″
Shale	7 ft.
Coal	3″
Clay	2 ft.
Sandstone	8 ft.
Altitude of lowest coal, 1035.	

On a left branch, 17¾ miles up the creek, on the right at the mouth of the branch, a following section was obtained at the mouth of an 8-yard entry.

On the left, 18 miles up Cutshin creek, is a long entry, its sections 1 yard in, also following. These two entries belong to John Baker. In neither one was the bottom foot seen.

Fire-clay Coal Rider.

17¾ Miles Up.		18 Miles Up.	
Sandstone.		Sandstone	6 ft.
Shale	6″	Coal	12″
Coal	16″	Shale	3″
Bituminous shale	½″	Coal	2″
Coal	2″	Shale	8″
Shale	6″	Coal more than	6″
Coal about	18″	Altitude, 1120.	
Altitude, 1120.			

The stain of the Fire-clay coal shows at altitude 1,100, in the road to the former entry.

BEECH BOTTOM BRANCH.

On the left, 18¾ miles up Cutshin creek: Altitude of mouth, 990.

On the right, ⅜ mile up the branch, 1 yard in a long entry, the Fire-clay coal at altitude 1,100 is 30 inches thick, on a hard floor and under 6 feet of shaly sandstone. A closed prospect above the entry gives the altitude of the Rider, 1,120.

On the right, 1¾ miles up the branch, at its head, W. Joseph has a 10-yard entry into the Helton bed at altitude 1,830. It has at its face 74 inches of solid coal, under 3 feet of shale, but the top of the ridge is only about 20 feet higher.

On the right of a right drain opposite the schoolhouse, 18⅞ miles up the creek, a closed entry into the Rider (?) is at altitude 1,100.

LANE BRANCH.

On the right, 19 miles up Cutshin creek: Altitude of mouth, 995.

On the left, ⅛ mile up the branch, an 8-yard entry has the following bed section, 1 yard in:

Fire-clay Coal.

Sandy shale	5 ft.
Coal	30″
Flint clay	3″
Clay more than	6″

Altitude, 1080.

A 15-foot cliff, conspicuous on both sides of the branch, nearly level, has its top at altitude 1,350, on the right, ¼ mile up the branch. This is the sandstone under the Hazard bed, the cliff under the Haddix bed also showing.

MAGGARD BRANCH.

On the left, 19¼ miles up Cutshin creek: Altitude of mouth, 1,000.

On the right, ⅛ mile up the branch, James Lewis has a 12-yard entry into the Fire-clay coal at altitude 1,105 with 27 inches of coal at its face, a hard floor and 10 feet of sandy shale covering. An outcrop of the Rider is exposed above the entry at altitude 1,125.

Thirty-foot cliffs on both sides of Maggard branch, 1¼ miles up it, with top at altitude 1,375, on the left, correspond with those on Lane branch, under the Hazard bed, showing only a very slight rise of strata up the branch.

JOHNS BRANCH.—On the left, 1¼ miles up Maggard branch. Altitude of mouth, 1,115.

The Fire-clay coal is about at the level of the mouth of this branch.

At the head, ½ mile up the branch, Elijah Pennington has an 8-yard entry with the following section at its mouth:

Hazard Coal.

Shale	1 ft.
Coal	25″
Shale	5″
Coal	5″
Black slate	5″
Coal	11″

Clay.

Altitude, 1380.

On a left branch, 1¾ miles up Maggard branch, on the left at its head, ½ mile up, W. Joseph has a closed entry at altitude 1,830. This is about 100 yards from his Helton bed entry on Beech Bottom branch and into the same bed.

On the right, 1⅝ miles up Maggard branch, a nearly closed entry gives the following section at its mouth:

Hamlin Coal.

Slipped coal.

Shale	3 ft.
Coal	25″
Clay	5″
Coal	3″(?)

Altitude, 1220.

Black slate is in the dump and also iron ore kidneys 5 inches thick, probably from the roof.

On the right, 19½ miles up Cutshin creek, Samuel Joseph has a long entry into the Fire-clay coal rider, at altitude 1,140, with 30 inches of coal, 3 yards in, on a hard floor and under 3 feet of massive sandstone.

In this vicinity the following was formerly noted, 5 feet above the creek:

Whitesburg Coal.

Massive sandstone	4 ft.
Shaly sandstone	4 ft.
Coal	6″
Splint coal	12″

Altitude, 1015. (?)

BEATTY BRANCH.

On the right, 20¼ miles up Cutshin creek: Altitude of mouth, 1,020.

On the left, ¼ mile up the branch, a 6-yard entry into the Fire-clay coal, at altitude 1,110, has, 2 yards in, 34 inches of coal under 4 feet of shaly sandstone and then 5 feet massive.

On a right branch, ½ mile up Beatty branch, on the left ⅛ mile up the right branch, a closed prospect into the Young (?) coal, at altitude 1,390, is reported to have 1½ feet of coal. The tops of cliffs, 3 to 8 feet high, are close below the bed and a closed entry into what appears to be the Hazard coal is at altitude 1,390 above the prospect.

On the right, ¾ mile up Beatty branch, the following bed section was obtained in a 1-yard entry of B. Day's, the bottom, in mud and water, not found:

Hazard (?) Coal.

Sandstone	10 ft.
Shale	5 ft.
Coal	21″
Shale	3″
Coal	1″
Shale	2″
Coal	½″
Shale	4″
Coal more than	16″

Altitude, 1430.

The top of the same bed shows in a prospect on the left, 1 mile up the branch, 27 inches of coal at altitude 1,440, under earth.

A prospect on the left, 20⅞ miles up Cutshin creek, shows 35 inches of coal of the Fire-clay coal Rider, under sandstone, at altitude 1,140.

In the vicinity of the Levi Boggs farm, at the mouth of Long branch, the following section was formerly obtained:

Section.

Shale.
Coal (Flag) ..... 25″
Clay.

Altitude, 1490.

Coal and iron ore in slip (Haddix?)

Altitude, 1290.

Shale.
Coal (Hamlin) ..... 6″

Altitude, 1190.

Massive sandstone.
Coal (Rider) ..... 36″

Altitude, 1130.

Massive sandstone ..... 20 ft.
Coal ..... 6″
Cannel coal ..... (Fire-clay) ..... 32″

Altitude, 1085.

The place of the Hazard coal is probably at about altitude 1,370, above which to the Flag coal is almost wholly exposed massive sandstone, corresponding with the rock-houses of Trace fork.

The Haddix (?) coal is at its normal height above the Hamlin, but if much slipped it may have come from the Hazard bed, which is frequently accompanied by ore.

The Fire-clay coal is probably actually higher than its altitude given, the interval to the Rider being too great and to the creek too small. The prospect appears now to be lost, Mr. Boggs having moved away and his successor knowing nothing of it.

LONG BRANCH.

On the left, 21 miles up Cutshin creek: Altitude of mouth, 1,040.

On the left, ¼ mile up the branch, 6 feet above it, the Fire-clay coal bed, at altitude 1,115, shows in outcrop 9 inches of coal under 20 feet of sandstone and with 6 feet of sandstone from the coal to the branch below, the cannel coal cut out by the sandstone.

A stripping on the right, ⅜ mile up the branch, gives 36 inches of coal of the Fire-clay Coal Rider, at altitude 1,130, on about 6 inches of hard shale and under 5 feet of shaly sandstone.

On the right, 21⅛ miles up Cutshin creek, Sam Joseph has a 2-yard entry into the Fire-clay Coal Rider at altitude 1,125, in which is 34 inches of coal on more than 6 inches of clay and under 2 feet of shale under sandstone.

MUD LICK BRANCH.

On the left, 21¼ miles up Cutshin creek: Altitude of mouth, 1,050.

On the left, ⅛ mile up the branch, Solomon Adams has a long entry into the Fire-clay Coal Rider, at altitude, 1,135, with 33 inches of coal, 1 yard in, on about 4 inches of shale and then sandstone and with 10 feet of massive sandstone covering.

On the right, ¼ mile up the branch, the same bed at altitude 1,125, has, 2 yards in a long entry, 33 inches of coal on a hard floor and with 5 feet of shale over it.

On the right, ¾ miles up the branch, a stripping shows the Hamlin bed at altitude 1,290, with 14 inches of coal and 2 inches shale parting in the middle. A 10-foot cliff of laminated sandstone covers it.

On the left, 22 miles up Cutshin creek, in a 3-yard entry is the following bed section:

Fire-clay Coal.

Shale	3 ft.
Coal	37″
Flint clay	4″
Soft clay.	
Altitude, 1125.	

On the left, 22¼ miles up the creek, a closed entry into the Fire-clay coal, at altitude 1,130, shows a bed 38 inches thick under 8 feet of sandstone.

On the right, 22⅜ miles up the creek, an outcrop of 3 inches of coal of part of the Whitesburg bed at altitude 1,095, is on 2 feet of fire-clay and shale and under 15 feet of shale with sandstone above.

TRACE FORK.

On the left, 22½ miles up Cutshin creek: Altitude of mouth, 1,100. A bench mark on the left at the mouth of this fork is at altitude 1,106.

On the left, ⅛ mile up the fork, Felix G. Lewis has a 12-yard entry into the Fire-clay coal at altitude 1,140, with 32 inches of coal at its mouth under 1 foot of shaly sandstone and then 3 feet inclined to massive.

On the right, ¼ mile up the fork, Henry Lewis has a 4-yard entry into the same bed, altitude 1,140, in which is 32 inches of coal under 20 feet of sandstone. Five feet under the entry is sandstone to 2 inches of coal 20 feet under it.

On the right at the fork, ½ mile up it, a wet entry into the Fire-clay coal bed, at altitude 1,155, has 31 inches of coal on a hard floor and under 4 feet of sandstone. This bed goes under Trace fork at the mill, ⅝ mile up it, at altitude 1,160.

NARROW BRANCH.—On the left, 1 mile up Trace fork: Altitude of mouth, 1,195.

On the right, at this branch, ½ mile up it, an outcrop of 8 inches of coal under 20 feet of sandy shale and at altitude 1,300 is probably a part of the Hamlin bed.

The branch forks, 1¼ miles up. In the right fork, ¼ mile up it, in a 15-foot sandstone rock-house is 29 inches of coal of the Hazard bed, at altitude 1,450.

TWIN BRANCH.—On the right, 1¼ miles up Trace fork: Altitude of mouth, 1,205.

On the left, ¼ mile up the branch, J. H. Coutts has a 4-yard entry in a 25-foot rock-house at altitude 1,500. About 2 feet of coal was seen when visited and 3 feet was

reported. The bed is evidently the Hazard as on Narrow branch. Cliffs below the entry also indicate this as of the Hazard bed.

PIGEON ROOST BRANCH.—On the right, 3 miles up Trace fork: Altitude of mouth, 1,255.

On the right, ¼ mile up the branch, an outcrop of 10 inches of coal, at altitude 1,325, under 3 feet of sandstone is of the Hamlin bed, as on Narrow branch.

This branch forks 1 mile up it. On the left, ⅛ mile up the right fork, Reason Joseph has a 3-yard entry with the following bed section at its face:

Hazard Coal.

Massive sandstone	5 ft.
Coal	15″
Clay	22″
Coal	2″
Shale	9″
Coal more than	27″

Altitude, 1535.

ROCK BRANCH.—On the left, 3 miles up Trace fork: Altitude of mouth, 1,255.

On the right, ⅛ mile up this branch, is 8 inches of coal under 6 feet of sandstone and at altitude 1,305. It is, again, of the Hamlin bed, and with the preceding outcrops of it on this fork a northwest dip is clearly shown.

On the left, ¼ mile up the branch, a 3-yard entry in a 40-foot rock-house has 27 inches of coal at its face. This is of the Hazard bed at altitude 1,495.

On a bench between the forks, ⅜ mile up Rock branch, a soft white fine grained sandstone is exposed, having a reddish top in which quartz pebbles are plentiful. These correspond with loose pebbles found on soft sandstone, 4 miles southeast, on Clover fork, Leatherwood creek, and about 80 feet under the Hazard coal there.

On the right, ⅛ mile up the right fork of Rock branch, in a 4-yard entry, the Hazard coal is again 27 inches thick, in a 40-foot rock-house, at altitude 1,495.

The prominence of the sandstone over the Hazard coal on branches of Trace fork is exceptional, and the absence of shale roof to the coal is also noticeable, being features common to the Haddix bed and in less degree to the Flag. The Hazard entry on Levi Lewis branch, 17⅛ miles up Cutshin creek, shows an intermediate phase. The excessive thickness of the sandstone probably accounts to some extent for the unusually large interval to the Hindman bed found at numerous places on Middle fork waters.

A bench mark between the forks, 3½ miles up Trace fork, is at altitude 1,269.

On the right, 23 miles up Cutshin creek, 20 feet above it, a 1-yard entry gives the following bed section:

Fire-clay Coal.

Sandstone	10 ft.
Coal	29″
Flint clay.	
Sandstone to creek.	

Altitude of coal, 1165.

The outcroppings of this bed on the right of the creek to near the mouth of Laurel fork show it to go under the creek at altitude 1,170.

LAUREL FORK.

On the left, 23¼ miles up Cutshin creek: Altitude of mouth, 1,175.

In a rock-house on the left, ¼ mile up this fork, beside the trail, an outcrop gives the following section:

Haddix Coal

Massive sandstone	20 ft.
Coal	9″
Shale	1″
Coal	4″
Bituminous shale	5″
Fire-clay	3 ft.

Altitude, 1345.

On the right, ¾ mile up the fork, 5 feet above it, the top of the same bed shows 9 inches of coal, at altitude 1,360, under 10 feet of sandstone.

WOLF PEN BRANCH.—On the left, 2¾ miles up Laurel fork: Altitude of mouth, 1,535.

On a broad bench on the right, ⅛ mile up the branch, the former Arch, now Joseph, Cornett entry has the following bed sections at its face 2 yards in in 1906 and 10 yards in in 1917:

Flag Coal.

2 Yards In.		10 Yards In.	
Coal	10″	Sandstone	8 ft.
Shale	2″	Coal	12″
Coal	18″	Shale	2″
Cannel coal	23″	Coal	15″
Coal	6″	Cannel coal	27″
Clay	½″	Coal	8″
Coal	10″		

Altitude, 1585.

It is probable that the bottom coal was left untouched in the later working. The cannel coal is of fine appearance both as to cleavage and luster. It is inclined to stick to the common coal above and below it. The roof is excellent, inclined to lamination.

Following are results of analyses of my samples of this coal, Nos. 2532-3-4, collected from the solid outcrops in 1885, Nos. 2738-7, collected from the face in 1906:

	2532 Upper 10-inch and Lower 10-inch.	2533 18-inch Seam	2534 Cannel.	2738 Upper 10-in. and Next 18-in.	2737 Cannel and 6-in. Below.
Moisture	1.80	1.60	0.60	1.67	1.56
Volatile combustible matter	34.60	32.06	45.30	38.78	46.94
Fixed carbon	57.70	61.24	47.20	53.91	45.16
Ash	5.90	5.10	6.90	5.64	6.34
	100.00	100.00	100.00	100.00	100.00
Sulphur	1.055	0.737	0.683	1.34	0.72
Phosphorus	.....	.....	.....	.....	.....
Coke	spongy	spongy	dense, spongy	spongy	dense
Specific gravity	1.243	1.243	1.255	1.290	1.225
Color of ash	brown, gray	light brown, gray	light brown, gray	light brown	buff
Total carbon	.....	.....	.....	76.65	74.56
B. T. U. per pound of coal	.....	.....	.....	14,142.	14,142.

No. 2532. "A portion of the sample has irregular laminated structure, showing very little fibrous coal and no apparent pyrites; another portion breaks with irregular fracture and shining surfaces; is pitch black and pure looking."

No. 2533. "Mostly a pure looking pitch black coal with irregular shining fracture. Some portions are irregularly laminated and more dull in appearance. Very little fibrous coal and no pyrites apparent."

No. 2534. "A very tough dull black coal. Fracture very flat, imperfectly conchoidal. No apparent fibrous coal or pyrites. Some parts of the sample somewhat soiled with clay."

No. 2738. "Average sample of soft, bright coal, somewhat weathered and with some ferruginous incrustation."

No. 2737. "Average sample mostly cannel, ... but with a small proportion of soft, bright pitch like coal." The soft coal was included with the cannel because of no visible cleavage between the two, the whole 29 inches appearing to form one solid block.

On the right, 23⅜ miles up Cutshin creek, a foot of coal stain in the road gives the altitude of the Fire-clay Coal Rider at 1,200.

ROAN FORK.

On the right, 23¾ miles up Cutshin creek: Altitude of mouth, 1,235.

The only opening found on this fork was a covered prospect on the left, 1½ miles up and 25 feet above the fork, probably, at altitude 1,575, of the Flag bed. The scarcity of openings on this and on Laurel fork, as well as on the tributaries farther up the creek, are attributable more to the scarcity of inhabitants and abundance of firewood than to the lack of workable coal.

GUTHRIE BRANCH.

On the left, 24½ miles up Cutshin creek: Altitude of mouth, 1,315.

On a right branch with mouth at altitude 1,440, and ⅝ mile up Guthrie branch, on the right, ⅝ mile up the

right branch, the Cornett 8-yard entry has the following bed section 5 yards in, the bottom coal hidden:

Hazard Coal.

Sandstone	10 ft.
Coal	14″
Shale	3″
Coal	44″

Altitude, 1580.

The top of a small cliff and bench upon it are 25 feet lower.

In the right fork at its mouth, ¾ mile up the right branch, Eli Henry has a 6-yard entry with the following bed section 2 yards in, the bottom not seen:

Hazard Coal.

Sandstone	2 ft.
Coal	½″
Clay	2″
Coal	59″

Altitude, 1590.

A prospect on the left, 1 mile up main Guthrie branch, 15 feet above it, gives the following, the bottom not seen:

Hazard Coal.

Shaly sandstone	3 ft.
Coal	13″
Clay	4″
Coal	49″

Altitude, 1595.

On the left, 24½ miles up Cutshin creek, a closed prospect into the Hazard bed (or a part of it), at altitude 1,540, shows a bed less than 3 feet thick. This tends to confirm a report that on the lower part of Guthrie branch and on Cutshin creek above, the bed is split.

LOW GAP FORK.

On the left, 25 miles up Cutshin creek: Altitude of mouth, 1,395.

On the left, 1½ miles up this fork, Robert Baker has a 6-yard entry in which is 41 inches of coal (the upper 8 inches left for roof), under 3 feet of shale. This is probably of the Hazard bed, at altitude 1,615.

A bench mark on the right, 25 miles up Cutshin creek, is at altitude 1,412.

The bottom of a 50-foot cliff, 25¾ miles up the creek, is at altitude 1,500. The Hazard coal is above this cliff though its thickness is suggestive of the one below that bed found on Trace fork.

ROCKHOUSE BRANCH.

On the right, 26 miles up Cutshin creek: Altitude of mouth, 1,490.

On the left of the left fork at its mouth, ⅜ mile up the branch, John Baker has a long entry into the Hazard bed with 34 inches of coal at the mouth, under 2 feet of sandstone and then shale and at altitude 1,590. It is reported that coal showed formerly in the branch 10 feet below the entry, the lower split of the bed.

LEFT FORK.

On the left, 26¾ miles up Cutshin creek: Altitude of mouth, 1,510.

On the right at the mouth of this fork, Reuben Baker has a 2-yard entry into the lower split of the Hazard bed, at altitude 1,575. About 2 feet of coal was visible when visited and perhaps 1 to 1½ feet more was covered. Four feet of shale covers the entry.

Mr. Baker has a long entry, 15 feet above the preceding, at the same place, into the upper split, which, 5 yards in, has 37 inches of coal, is under 2 feet of sandstone and at altitude 1,590.

RIGHT FORK.

On the right, 26¾ miles up Cutshin creek: Altitude of mouth, 1,510.

JOY FORK.—On the left, ½ mile up Right fork: Altitude of mouth, 1,540.

On the right, ⅛ mile up this fork, Robert Lewis has an 8-yard entry into the upper split of the Hazard bed, at altitude 1,600, having 35 inches of coal 3 yards in and under 2 feet of shaly sandstone.

The Hazard bed goes below drainage, 1 mile up Right fork, at altitude 1,635, with coal reported 40 inches thick.

MIDDLE FORK.
(Above Cutshin Creek.)

On a right branch up Middle fork, 5¾ miles below Hyden, on the right, ⅛ mile up the branch, a closed entry gives the following section at its mouth:

Fire-clay Coal Rider.

Shale	15 ft.
Coal	2″
Shale	5″
Coal	25″
Bone coal	5″
Coal	8″

Altitude, 1005

Section and altitude both indicate this as of the Rider and confirmation is added by the presence of considerable sulphur in the coal. The top of the 20-foot cliff farther up the road, under the Haddix coal, is at altitude 1,185 (about 200 feet above the Fire-clay coal).

On the left of Middle fork, 5⅜ miles below Hyden, a 3-yard entry has the following bed section at its face:

Fire-clay Coal.

Shale	15 ft.
Coal	26″
Shale	1″
Coal	8″

Altitude, 960.

On the right, 5⅛ miles below Hyden, the Whitesburg bed, at altitude 885, shows in outcrop, 4 inches of

coal under 1 inch of black slate and then 5 feet of laminated sandstone, probably a part of the bed only.

MILE BRANCH.

On the right, 4¾ miles below Hyden: Altitude of mouth, 800.

On the left, ¼ mile up the branch, at the mouth of one of several long entries into the Whitesburg bed, at altitude 865, is 35 inches of coal of which the upper foot is inclined to cannel coal structure. The floor is of clay and covering of 1 foot of shale and then one of sandstone. At a former visit 30 inches of coal was found in a 5-yard, William Sizemore, entry.

A persistent report of thick coal in the river about the mouth of Mile branch, though perhaps exaggerated, is not wholly discredited. The first report was of a 9-foot bed with numerous partings and much sulphur. The last report was of 3 to 4 feet of coal, an 8-inch parting beneath it and thick coal below that, none of it showing much sulphur. The upper foot or more coal is visible at low water, on the left 4⅝ miles below Hyden. This is of the Amburgy bed, at altitude 800, which on Rush branch (below Hell-for-Certain creek), has 44 inches of nearly clean coal containing about 1 per cent. sulphur. On Asher branch (below Hyden) the bed varies much in thickness.

NIGHWAW BRANCH.

On the right, 4½ miles below Hyden: Altitude of mouth, 805.

On the left, ¼ mile up and at this branch, William (formerly Bart) Sizemore has an entry with the following section:

Fire-clay Coal.

Shale	6 ft.
Coal	3″
Shale	3″
Coal	45″

Altitude, 1010.

On the right of the river, 4¼ miles below Hyden, William Couch has an old opening with a following section. Also on the right, 4⅛ miles below Hyden, the face of his 15-yard entry gives a section as follows, the coal of the latter somewhat bony and hard:

Fire-clay Coal.

Old Opening.		15-Yard Entry.	
Shale	7 ft.	Shale	20 ft.
Coal	2″	Coal	2″
Shale	3″	Shale	4″
Coal	33″	Coal	29″
Flint clay	3″	Hard floor.	
Coal	6″	Altitude, 990.	

Altitude, 1010.

The flint clay is black and looks much like coal. It is possible that these sections, taken many years apart, are from one point, which may be assumed intermediate in location and height to the figures given.

On the left, 4⅛ miles below Hyden, W. S. Sizemore has a 2-yard entry in which is the following section:

Fire-clay Coal.

Coal stain	2½ ft.
Interval	6 ft.
Shale	2 ft.
Coal	42″
Flint clay	3″
Coal	4″

Altitude, 960.

ELIC BRANCH.

On the left, 3¾ miles below Hyden: Altitude of mouth, 805.

On the right, ¼ mile up the branch, Allen Munsey has a 2-yard entry into the Fire-clay coal, at altitude 1,015, in which is 50 inches of coal on a hard floor and under 8 feet of sandy shale.

On a left branch at its mouth, ¾ mile up Elic branch, Mr. Munsey has a second entry into the same bed, at altitude 1,015, with 46 inches of coal at the face, 4 yards in, and similar roof and floor.

On the right of the river, 3 miles below Hyden, Howard Asher has an 8-yard entry into the Fire-clay coal, at altitude 1,030, having 27 inches of coal, 1 yard in, and roof of massive sandstone.

On the left of the river, 3 miles below Hyden, Rene Asher has a 12-yard entry with the following section at its mouth:

Fire-clay Coal.

Sandstone	2 ft.
Shale	1 ft.
Clay	4″
Bituminous shale	6″
Coal	58″
Hard floor.	
Altitude. 1050	

On the right, at the ford, 2¾ miles below Hyden, is a bench mark at altitude 824.

On the left of a right drain, 2⅜ miles below Hyden, a 10-yard entry into the Fire-clay coal, at altitude 1,070, has, half way in, 42 inches of coal on 3 inches of fire-clay and under 3 feet of sandy shale with 6 feet of sandstone above that.

ASHER BRANCH.

On the right, 2¼ miles below Hyden: Altitude of mouth, 815.

From several now abandoned entries, about ⅛ mile up this branch, coal was shipped down the river in considerable quantity. From one of these the following section was obtained, so far as seen the maximum of the locality, and also following are the results of analysis of my sample of the coal from 3 yards underground, the bed at that time wrongly correlated as the Elkhorn:

Amburgy Coal.

Sandstone	10 ft.
Coal	30″
Clay	1″
Coal	10″
Shale	2″
Coal	13″
Altitude, 865.	

No. 2742.

Moisture	1.80
Volatile combustible matter	34.14
Fixed carbon	57.86
Ash	6.20
	100.00
Sulphur	0.613
Coke	64.06
Specific gravity	1.321

"Some fibrous coal between the laminae, but no apparent pyrites."

On the right, ¼ mile up the branch, Clark Eversole now has a 12-yard entry with the following section, the two upper seams measured at the face, the lowest seam not mined because of dip and poorer coal:

Amburgy Coal.

Massive sandstone	8 ft.
Sandy shale	5 ft.
Coal	33″
Clay	1″
Coal	8″
Shale	4″
Coal	12″
Altitude, 875.	

On the right, ½ mile up the branch, a 10-yard entry into the Amburgy bed, at altitude 880, has 30 inches of coal at its mouth, under 4 feet of shale and then 5 feet of shaly sandstone. In an adjacent long entry at the same altitude the coal is 28 inches thick at its mouth. Possibly more coal may lie in both these entries close below that worked.

On the left, 1½ (?) miles up the branch, Mrs. Annie Steele has a 20-yard entry from which the following section was formerly obtained:

Fire-clay Coal.

Sandstone	5 ft.
Shale	8 ft.
Coal	50″
Bone coal	2″
Coal	12″
Flint clay	5″
Coal	5″
Altitude, 1070.	

On the right, 1¾ (?) miles up the branch, are two thin coals, three feet apart, under massive sandstone. These, at altitude 1,315, though apparently rather too high for it, are probably of the Haddix bed.

On the left of the river, 2¼ miles below Hyden, a 15-yard entry has the following bed section 2 yards in:

Fire-clay Coal.

Shale	6 ft.
Coal	2″
Shale	7″
Coal	41″
Bituminous shale more than	3″

Altitude, 1060.

BETTY BRANCH.

On the right, 1¾ miles below Hyden: Altitude of mouth, 815.

On the right, ⅛ mile up the branch, an 8-yard entry has the following section at its mouth:

Amburgy Coal.

Shale	3 ft.
Coal	27″
Clay	1″
Coal	6″

Altitude, 865.

On the right, at its head, ¼ mile up the branch, Hensley Stedham has a 10-yard entry with the following bed section at its face:

Fire-clay Coal.

Shale	2 ft.
Coal	50″
Flint clay	6″
Coal	3″

Altitude, 1060.

On the left of the river, 1⅝ miles below Hyden, a long entry has the following section at its mouth:

Amburgy Coal.

Shale	5 ft.
Coal	24″
Shale	1″
Coal	1″

Altitude, 875.

A thin coal shows in the cut 15 feet above the main bed, probably a split from the latter.

On the right of the river, 1¼ to ¾ miles below Hyden, are three entries into the Amburgy bed, at altitudes 860 and 865, having in the main seam 25 to 27 inches of coal, the upper two entries with a 2-inch shale parting beneath, under which is 5 inches more of coal.

On the left, 1 mile below Hyden, the Eversole closed entry shows the Fire-clay coal at altitude 1,070, about 4½ feet thick under 5 feet of shale.

On the left, ⅝ mile below Hyden, William Roberts has a 15-yard entry into the Fire-clay coal, at altitude 1,060, with 56 inches of coal at the face, including 1 inch of bone coal 1 foot from the bottom. A foot of sandstone shows over the coal and then 3 feet of shale.

OWLS-NEST BRANCH.

On the left, ½ mile below Hyden: Altitude of mouth, 815.

On a left branch, ⅛ mile up Owls-Nest branch, on the right at its mouth, is a closed entry into the Amburgy bed with about 2½ feet coal under 3 feet of sandy shale. A closed entry on the right, ½ mile up Owls-Nest branch gives the altitude of the same bed at 885.

On the left, ¾ mile up Owls-Nest branch, a 5-yard entry into the Amburgy bed at altitude 915, has, at its mouth, 32 inches of coal on fire-clay and under 6 feet of shale.

On the right of and at the mouth of a left hollow, 1⅛ miles up Owls-Nest branch, Joseph Maggard has a 20-yard entry into the Fire-clay coal, at altitude 1,075, with 45 inches of coal at its face and 5 feet of massive sandstone on it. The interval up from the Amburgy coal corresponds much more nearly to that of the Whitesburg bed, but all other evidence is against such correlation.

BANGER BRANCH.—On the right, 1¼ miles up Owls-Nest branch: Altitude of mouth, 915.

The Amburgy coal goes below drainage about at the mouth of this branch.

On the left, ½ mile up the branch, Andrew Asher has a 12-yard entry of the following bed section 4 yards in:

Fire-clay Coal.

Sandstone	3 ft.
Coal	43″
Flint clay.	
Altitude, 1060.	

On the left, at its head, 1½ miles up Owls-Nest branch, are seven entries into the Hamlin coal, at altitude, 1,155. The 10-yard upper entry has 19 inches of coal 1 yard in, a 9-inch or more clay floor and 15 feet of shaly sandstone over it.

ROBERTS BRANCH.

On the right, ½ mile below Hyden: Altitude of mouth, 815.

A closed entry on the left at the mouth of the branch gives the Amburgy coal, at altitude 865.

Nathaniel Roberts has an entry, ⅛ mile up the branch, into the Fire-clay coal, at altitude 1,050, having 49 inches of coal under 6 feet of shale and then 3 feet of sandstone.

On the right, ¼ mile up, Hughes Asher has an opening of the following section:

Hazard Coal.

Cliff sandstone	20 ft.
Coal	11″
Bituminous shale	1″
Coal	4″
Bituminous shale	3″
Coal	14″
Clay	1½″
Coal	3″
Altitude, 1310.	

On the right of the river, ¼ mile below Rockhouse creek, Hyden, Elisha Lewis has a long entry from which coal is delivered by open chute to the road over 200 feet below. The proportion of slack coal is, of course, large, demand for it is small, and the mining under such wasteful methods can hardly be profitable. The bed section from 4 yards in the entry follows, the main seam continuing nearly uniform in thickness for 50 yards in the entry, where water stopped further examination:

Fire-clay Coal.

Shaly sandstone	8 ft.
Shale	5 ft.
Coal	56″
Flint clay	3″
Coal about	5″
Altitude, 1045.	

ROCKHOUSE CREEK.

On the right of the river at Hyden: Altitude of mouth, 820.

A bench mark at the courthouse in Hyden is at altitude 870.

On the right of a left drain at the mouth of Rockhouse creek, Elisha Lewis has a long entry into the Fire-clay coal, at altitude 1,040, with coal running evenly at about 54 inches from 5 to 30 yards in, water preventing further examination. On the coal is exposed 2 feet of shale.

On the left, ⅛ mile up the creek, James Lewis has a now closed entry into the same bed, at altitude 1,050, having 51 inches of coal some 150 yards in and the following section at the mouth, the flint clay and bottom coal as reported by a miner at work in the entry:

Fire-clay Coal.

Sandstone.	
Shale	2 ft.
Coal	53″
Flint clay	6″
Coal	8″
Altitude, 1050.	

An incline formerly served to bring the coal down to the main street of the town.

On the right, ⅛ mile up the creek, a now closed entry gave the following bed section 4 yards in:

Amburgy Coal.

Sandstone	10 ft.
Shale	2 ft.
Coal	27″
Clay	½″
Bony coal	5″

Altitude, 870.

The main seam looks like a coking coal and the bony coal marketable, but an outcrop in the road beside the entry now shows 28 inches of coal on black slate, apparently.

On the right of a right drain, ⅛ mile up the creek, an abandoned entry into the Fire-clay coal, at altitude 1,050, has 54 inches of coal at its mouth, with more than 3 inches of flint clay floor and 6 feet of shale roof.

On the right, ¼ mile up the creek, Judge Lewis has a 100-yard entry of the following bed section at its face, the coal running from 4 to 4½ feet with one minor exception:

Fire-clay Coal.

Sandstone	10 ft.
Shale	4 ft.
Coal	53″
Flint clay more than	2″

Altitude, 1045.

TANTROUGH BRANCH.—On the right, ⅜ mile up Rockhouse creek: Altitude of mouth, 830.

A closed entry on the right at the mouth of the branch gives the Amburgy coal at altitude 885.

On the right, ⅜ mile up the branch, Judge Lewis has a 20-yard entry into the Fire-clay coal, at altitude 1,050, with 54 inches of coal at its mouth and 52 inches at its face, a hard floor and 15 feet of shale covering.

On the right, ¼ to ½ mile up the branch, Judge Lewis has several abandoned entries and strippings, on a

broad bench, from one of which the following section was obtained:

Hamlin Coal.

Sandstone.	
Sandy shale	3 ft.
Coal	4″
Shale	2″
Coal	1″
Shale	3 ft.
Bituminous, splint and cannel coal	2½ to 3 ft

Altitude, 1160.

On the right, ½ mile up Rockhouse creek, a long entry into the Amburgy bed, at altitude 850, has, 2 yards in, 30 inches of coal with 15 feet of sandy shale covering.

On the right, 1½ miles up the creek, in a 2-yard entry into the same bed, at altitude 870, is one foot of coal under 10 feet of shale. On the left, 1⅞ miles up and 2 feet above the creek, the bed shows in outcrop, at altitude 875, with 13 inches of coal under 15 feet of shaly sandstone. These thinner coals may be of an upper split of the bed.

BIG LUTE BRANCH.—On the right, 2 miles up Rockhouse creek: Altitude of mouth, 876.

On the left, ⅜ mile up the branch (right fork), William Sizemore has a 40-yard entry with a following bed section at its face, and a long entry 120 yards farther up, its section 20 yards in also following:

Fire-clay Coal.

Lower Entry.		Upper Entry	
Sandstone.		Sandstone	10 ft.
Shale	6″ (?)	Shale with coal	1 to 3 ft.
Coal	24″	Sandstone with coal	0 to 3 ft.
Shale	3″	Shale with coal	6″ to 12″
Coal	1″	Coal	27″
Knife-edge parting.		Shale	3″
Coal	39″	Coal	1″
Hard floor.		Knife-edge parting.	
Altitude, 1060.		Coal	38″
		Hard floor.	
		Altitude, 1060.	

The shale roof of the upper entry is bituminous and the higher shale contains 3 seams of coal where thickest, reducing to 1 seam in an exposure of about 15 feet. These coals may represent the Rider of the bed.

At a former visit 6 inches of coal was exposed at one of these entries below a 5-inch flint clay floor. My sample taken there from a top seam of 26 inches, middle seam of 2 inches and bottom seam (above the flint clay) of 35 inches yielded the following results to analysis:

Chemical Report No. 2737.

Moisture	0.74
Volatile combustible matter	36.06
Fixed carbon	54.00
Ash	9.20
	100.00
Sulphur	1.307
Coke (spongy)	63.20
Specific gravity	1.279

"A pure looking firm coal, generally breaking irregularly, with irregular surfaces. A portion with lamellar fracture and some fibrous coal; no pyrites apparent."

SHACK BRANCH.—On the right, 3½ miles up Rockhouse creek: Altitude of mouth, 921.

On the right, ½ mile up the branch, the following was obtained in a 4-yard entry:

Fire-clay Coal.

Sandstone.
Shale ..... 3 ft.
Coal ..... 2″
Shale ..... 2″
Coal ..... 1″
Shale ..... 2″
Coal ..... 37″
Flint clay ..... 3 to 5″
Coal ..... 5″
Clay.
Altitude, 1070.

POTATO KNOB BRANCH.—On the left, 4½ miles up Rockhouse creek: Altitude of mouth, 950.

On the right, ½ mile up this branch, Joseph Lewis has a 1-yard entry with the following bed section:

Fire-clay Coal.

Shale ..... 8 ft.
Coal ..... ½″
Knife-edge parting.
Coal ..... 29″
Flint clay.
Altitude, 1045.

On the left, 4¾ miles up the creek, Joseph Lewis has a 12-yard entry into the Fire-clay coal, at altitude 1,060, having 30 inches of coal under 25 feet of shaly sandstone.

The Rider was formerly opened on this sandstone, 22 inches of coal at altitude 1,085.

PUNCHEON CAMP BRANCH.—On the right, 5¼ miles up Rockhouse creek: Altitude of mouth, 988.

On the right, ½ mile up the branch, Joseph Sizemore has an opening with the following section:

Fire-clay Coal.

Shale and clay ..... 10 ft.
Coal ..... 3″
Shale ..... ½″
Coal ..... 26″
Hard floor.
Altitude, 1095

ROAD FORK.—On the left, 5½ miles up Rockhouse creek: Altitude of mouth, 1000.

On the left, ¾ mile up this fork, the following coals were found in early prospecting by the Survey, the altitudes given being probably 20 to 30 feet too low:

Francis Coal. (?)

Sandstone.
Clay ..... 8″
Coal ..... 4″
Shale ..... 6″
Coal ..... 11″
Clay.
Altitude, 1500.

Haddix Coal.

Sandstone.
Coal ..... 4″
Shale ..... 3 ft.
Coal ..... 2″
Clay.
Altitude, 1280.

Fire-clay Coal and Rider. (?)

Sandstone.
Semi-cannel and splint coal .....22″
Shale with coal.....22″
Shale and shaly sandstone .....33″
Coal with ½ inch black slate .....12″
Altitude, 1090.

The 22-inch coal seam of the lowest section is evidently of the Rider, but the coal below is questionable. The Fire-clay coal is 4½ feet thick where it first appears above drainage, across the ridge on Big creek near its head. The Rider there, 22 inches of block coal, is 10 feet above the main bed.

LEFT FORK.—On the left, 5½ miles up Rockhouse creek: Altitude of mouth, 1,000.

LAUREL CREEK.—On the right, ½ mile up Left fork: Altitude of mouth, 1,010.

An early prospect on the right, ¼ mile up the creek gave the following:

Hamlin Coal.

Sandstone ..... 5 ft.
Shale ..... 5 ft.
Splint coal .....12″
Shale ..... 2″
Coal ..... 2″
Clay.
Altitude, 1180.

On the right at the head of the creek, 1¼ miles up it, a now closed opening into reported thick coal, probably of the Hindman bed, is at altitude 1,600.

On the Left fork, one mile up, an early prospect gave the following:

Fire-clay Coal Rider.

Shaly sandstone .....10 ft.
Coal .....24″
Clay ..... 2 ft.
Sandstone.
Altitude, 1070.

On a left branch of Middle fork, ¼ mile above Rockhouse creek, on the left at its mouth, James Lewis has a 4-yard entry of the following bed section:

Amburgy Coal.

Sandstone ..... 6 ft.
Shaly sandstone ..... 6 ft.
Coal .....24″
Knife-edge parting.
Bone coal about..... 4″
Altitude, 875.

HURST CREEK.

On the left, ½ mile above Hyden: Altitude of mouth, 825.

On the right, ⅛ mile up the creek, at the mouth of an abandoned 2-yard entry is a following section. Again on the right, ¼ mile up, a former measure gave a section also following:

Amburgy Coal.

⅛ Mile Up.

Shale ..... 5 ft.
Massive sandstone ..... 3 ft.
Shale ..... 6 ft.
Coal .....27″
Shale ..... 1″
Coal .....11″
Clay.
Shale to branch.....20 ft.
Altitude of coal, 855.

¼ Mile Up.

Shaly sandstone .....10 ft.
Coal .....27″
Shale ..... 3″
Coal ..... 8″
Altitude, 865.

A former John Lewis opening, ½ mile up the creek, gave the following section:

Fire-clay Coal.

Sandstone.
Coal ..... 17″
Shale ..... 12″
Coal ..... 1″
Shale ..... ½″
Coal ..... 38″
Flint clay ..... 6″
Coal ..... 6″
Clay.
Altitude, 1025.

ROUND HOLE BRANCH.—On the left, ¾ mile up Hurst creek: Altitude of mouth, 900.

On the left, ¼ mile up the branch, an 8-yard entry has the following bed section at its face:

Fire-clay Coal.

Sandstone ..... 4 ft.
Shale ..... 4 ft.
Coal ..... 17″
Soft clay ..... 10″
Coal ..... 28″
Altitude, 1025.

On a right drain, ¾ mile up Hurst creek, on the right, ⅛ mile up the drain, the face of a 5-yard entry has the following bed section:

Fire-clay Coal.

Shale ..... 1 ft.
Coal ..... ½″
Knife-edge parting.
Coal ..... 36″
Hard floor.
Altitude, 1040.

On the left, 1¼ miles up Hurst creek, 20 feet above it, the face of an 8-yard entry has the following bed section, the 20-inch parting being a white powder where exposed:

Fire-clay Coal.

Shaly sandstone ..... 6 ft.
Coal ..... 35″
Soft clay ..... 20″
Coal ..... 5″
Soft clay.
Altitude, 1050.

An outcrop of the Rider over the entry shows 10 inches of coal under 6 inches of shale and then 4 feet of sandstone, at altitude 1,100.

ROUGH BRANCH.—On the left, 1⅜ miles up Hurst creek: Altitude of mouth, 1,105.

An outcrop at the mouth of this branch gives the following:

Fire-clay Coal Rider.

Sandstone ..... 10 ft.
Shale ..... 4″
Coal ..... 30″
Black jack ..... 5″
Clay.
Altitude, 1130.

Ten feet lower is 8 inches of coal under 5 feet of shale, which may be an upper split from the Fire-clay coal. The interval to the mouth of the branch is mostly shale and the main coal appears to be under the mouth of Rough branch.

DAVIS (MART'S) BRANCH.—On the left, 1¾ miles up Hurst creek: Altitude of mouth, 1,160.

On the left, at the mouth of this branch, J. Munsey has a 10-yard entry of the following bed section 2 yards in:

Haddix (?) Coal.

Sandstone ..... 30 ft.
Coal ..... 4″
Shale ..... 4″
Coal ..... 18″
Altitude, 1340.

On the right, 1¾ miles up Hurst creek, a prospect into the probable Fire-clay Coal Rider shows 20 inches of coal under 5 feet of sandstone, at altitude 1,185.

An old opening at Mr. Morgan's on Middle fork, one mile above Hyden, gave the following section:

Fire-clay Coal.

Coal, sandstone and shale	3 ft.
Coal	30″
Flint clay	5″
Coal	5″

Altitude, 1025.

On the right, by the road, 1⅝ miles above Hyden, an outcrop of the Amburgy bed shows 2½ feet of coal, at altitude 855, under 8 feet of sandy shale and then 15 feet of sandstone.

SHORT CREEK.

On the right, 2 miles above Hyden: Altitude of mouth, 835.

On a right branch, ⅜ mile up Short creek, on the right, ¼ mile up the right branch, Lee Dickson has a 5-yard entry into the Fire-clay coal, at altitude 1,045, having at its mouth 35 inches of coal on 4 inches or more of flint clay and under 5 feet of shale.

On the left of a right drain, ¾ mile up Short creek, the same bed, at altitude 1,040, has 32 inches of coal on a hard floor and under 8 feet of shale.

On a right branch with mouth at altitude 935, 1⅛ miles up Short creek, on the right, ¼ mile up the right branch, Grant Morgan has a 15-yard entry into the same bed, at altitude 1,040, having 37 inches of coal at its face (increased from 35 inches at its mouth). It has a hard floor and a covering of 10 feet of shale and then 20 feet of sandstone.

On the left of a right branch at its mouth, 1⅜ miles up Short creek, the same bed, at altitude 1,040, has, 1 yard in, a 6-yard entry, 34 inches of coal on a hard floor and under 6 feet of sandy shale.

On the right of a right drain, 1⅝ miles up Short creek, 1 yard in a wet entry, is the following bed section:

Fire-clay Coal.

Shale	8 ft.
Coal	33″
Flint clay	5″
Coal	4″

Altitude, 1065.

On a right branch with mouth at altitude 960, 1¾ miles up Short creek, on the right ⅜ mile up the branch, 5 feet above it an 8-yard entry gives a following bed section 2 yards in.

On the right, 2¼ miles up Short creek, 10 feet above it, an 8-yard entry, 2 yards in, has the bed section also following:

Fire-clay Coal.

1¾ Miles Up.		2¼ Miles Up.	
Sandstone	1 ft.	Coal	½″
Sandy shale	3½ ft.	Shale	½″
Clay shale	9″	Coal	2″
Coal	33″	Shale	1″
Flint clay	6″	Coal	28″
Coal	4″	Flint clay	6″
Clay.		Clay.	
Altitude, 1055.		Altitude, 1050.	

An outcrop 30 yards farther up stream from the latter entry shows the Rider with 1½ to 2 feet of coal in shale, at altitude 1,080.

On a left branch of Middle fork, 2¾ miles above Hyden, on the left, ⅛ mile up the branch, a prospect, at altitude 865, shows the Amburgy bed with 10 inches of coal under 3 feet of shale.

On the left, ¼ mile up the branch, left fork, 1 yard in a long entry, and again, 2 yards in an entry, ⅜ mile up, the Fire-clay coal at altitude 1,025, has 30 and 32 inches of coal, respectively, the former with about 4 inches of flint clay under it and shaly sandstone covering; the latter with a hard floor and 10 feet of shale above.

Early prospecting at John Bowling's, probably at this place, disclosed 3 inches of coal below the flint clay. Also, 20 feet lower, 14 inches of coal under 4 inches of black slate. The following was also found at that time:

Whitesburg Coal.

Coal ..... 10″
Shale ..... 3″
Coal ..... 3″
Shale ..... 7″
Coal ..... 2″
Shale ..... 2″
Coal ..... 2″
Shale ..... 1″
Coal ..... 6″
Altitude, 960.

The following also were found at John Bowling's, on Middle fork 3 miles above Hyden:

Hazard Coal.

Black slate ..... 6″
Coal ..... 2″
Shale ..... 1″
Coal ..... 2″
Shale ..... 1″
Coal ..... 2″
Shale ..... 10 ft.
Coal ..... 6″
Shale ..... 9″
Coal ..... 3″
Clay.
Altitude, lower coal, 1335.

Haddix Coal.

Bituminous clay ..... 3″
Coal ..... 13″
Clay.
Altitude, 1265.

Hamlin Coal.

Shale ..... 15 ft.
Coal ..... 7″
Shale (with iron ore) ..... 14″
Coal ..... 2″
Shale ..... 7″
Coal ..... 7″
Clay.
Altitude, 1125.

Coal ..... 30″
Altitude, 1095.

Amburgy Upper Split.

Shale ..... 10 ft.
Coal ..... 17″
Altitude, 880.

Amburgy Lower Split.

Sandstone ..... 15 ft.
Coal ..... 32″
Altitude, 850.
River at mill, altitude 845.

On the left of Middle fork, 3¼ miles above Hyden, Henderson Baker has a wet entry into the Fire-clay coal, at altitude 1,045, having 35 inches of coal on a hard floor and under one foot of sandstone.

Over the preceding he has a 2-yard entry into the Rider, at altitude 1,065, with 40 inches of coal at its face and under 10 feet of shaly sandstone.

MUNSEY CREEK.

On the right of Middle fork, 3¼ miles above Hyden: Altitude of mouth, 845.

On the right, 1⅜ miles up the creek, at a stripping, the following is exposed:

Whitesburg Coal.

Shaly sandstone ..... 5 ft.
Shale ..... 12 ft.
Coal ..... ½″
Shale ..... 1″
Coal ..... 3″
Shale ..... 3″
Hard block coal ..... 16″
Altitude, 965.

RIGHT FORK.—On the right, 1½ miles up Munsey creek: Altitude of mouth, 965.

On the left and at the fork, ⅜ mile up it, a stripping gives the Fire-clay coal, at altitude 1,050, with 22 inches of coal on 2 inches of flint clay and under 2 feet of shaly sandstone.

An outcrop in the fork, ⅛ mile up it, shows the following:

Hamlin Coal.

Shaly sandstone	2 ft.
Black slate	1 ft.
Coal	5″
Black slate	2″
Shaly sandstone.	
Altitude, 1170.	

On the right, by the graded road, 1¾ miles up Munsey creek, an outcrop in the broken point of a hill where an abnormal condition may have resulted, gives the following:

Fire-clay Coal.

Coal stain.	
Shale	3 ft.
Coal about	4″
Shale	1 ft.
Shaly sandstone	6 ft.
Coal	6″
Flint clay.	
Altitude, 1070.	

Pits in the creek, 2¼ miles up it, give evidence of 2 to 3 feet of coal, possibly more, with one foot visible under 6 feet of sandstone. The coal, preserved under water, looks bright and hard like the Fire-clay coal, but from its altitude, 1,130, it is judged to be of the Rider.

A sulphur spring on the right of the road, 2⅜ miles up Munsey creek, and on the left of a right branch, under a high cliff, is at altitude 1,190, and probably from the Hamlin coal.

HURRICANE CREEK.

On the left of Middle fork, 4¼ miles above Hyden: Altitude of mouth, 848.

On the right at the mouth of the creek an outcrop of the Amburgy bed, at altitude 860, has 10 inches of coal with a 2-inch parting in the middle and 20 feet of shale covering.

On a left branch with mouth at altitude 1,030, 1¼ miles up the creek, on the right at the mouth of the branch, Jasper Morgan has an 8-yard entry with the following bed section at its face:

Fire-clay Coal.

Shale	3 ft.
Coal	23″
Shale	2″
Coal	8″
Altitude, 1060	

WOLF FORK.—On the right, 1½ miles up Hurricane creek: Altitude of mouth, 1070.

In the point of the hill on the left at the mouth of this fork, the mouth of a long entry has the following bed section, to which is added this covering of a closed entry on the left of the main creek at the same place:

Fire-clay Coal.

Shaly sandstone	5 ft.
Shale	10 ft.
Coal	4″
Shale	8 ft.
Coal	¼″
Knife-edge parting.	
Coal	38″
Hard fire-clay over	6″
Altitude, 1060.	

On the left, ½ mile up Wolf fork, the Hamlin bed shows in outcrop 16 inches of coal under shale, at altitude 1,140.

On the right, ½ mile up the fork, Shade Stedham has an 18-yard entry with the following bed section at its face, the upper seam of coal not mined:

Hazard Coal.

Coal	12″
Shale	2½ ft.
Coal	18″
Shale	6″
Coal	24″
Altitude, 1300.	

On the left, 1¾ miles up Hurricane creek, a prospect gives the following:

Hamlin Coal.

Sandstone	5 ft.
Covered	2 ft.
Coal	22″
Shale and clay	3 ft.
Coal	19″

Altitude, 1165.

On a right branch, 2 miles up the creek, on the left, ¼ mile up and at the head of the branch an incomplete prospect gives about 28 inches of coal and 4 inches of parting at altitude 1,295. This is probably of the Hazard bed, but may be of the Haddix, the coal apparently having more splint than has the Wolf fork opening, and strata appear to rise faster on the main creek above Wolf fork than on that fork.

BURNT CAMP CREEK.

On the left of Middle fork, 5¼ miles above Hyden: altitude of mouth, 850.

A bench mark on the left at the mouth of the creek is at altitude 857.

MORGAN BRANCH.—On the left at the mouth of Burnt Camp creek: Altitude of mouth, 856.

On the right, ⅛ mile up the branch, the face of a 20-yard entry has a following bed section. On the left at the branch, ½ mile up it, in a 2-yard entry is the bed section also following:

Fire-clay Coal.

20-Yard Entry.

Sandstone	5 ft.
Sandstone with 9 thin coals	8 ft.
Shaly sanstone	1 ft.
Coal	31″
Shale	3″
Coal	9″

Soft floor.

Altitude, 1040.

2-Yard Entry.

Shaly sandstone	10 ft.
Coal	½″
Bituminous shale	2″
Coal	30″
Shale	2″
Coal	8″

Hard clay floor.

Altitude, 1055.

Between these two entries was the former Jesse Morgan entry, with section and results of analysis of my sample from it following:

Fire-clay Coal.

Shale.	
Coal	35″
Shale	1″
Coal	12″
Black slate	4″
Shale.	

Altitude, 1050.

Chemical Report No. 2738.

Moisture	0.70
Volatile combustible matter	34.70
Fixed carbon	55.20
Ash	9.40
	100.00
Sulphur	0.983
Coke (spongy)	64.60
Specific gravity	1.291

On the left, ⅜ mile up Burnt Camp creek, is 6 inches of coal in a 10-foot rock-house, at altitude 980, an unnamed bed probably 20 to 30 feet below the Fire-clay coal.

LEFT FORK.—On the left, ½ mile up Burnt Camp creek: Altitude of mouth, 875.

Prospectors reported the Fire-clay coal thin and in three splits on this fork.

On the left, 1⅛ miles up the fork, 20 feet above it, an entry and stripping give the following:

Hamlin Coal.

Shaly sandstone	10 ft.
Coal	11″
Black slate	7″
Clay and shale	8 ft.
Coal about	12″

Altitude (lower coal), 1160.

On the right, 1⅛ miles up the fork, John Cornett has a 5-yard entry with a following bed section at its face.

On a left branch, 1⅝ miles up the fork, on the left, ⅛ mile up the branch, John W. Adams has a long entry with a following section at its mouth:

Hazard Coal.

Cornett.		Adams.	
Argillaceous sandstone	8 ft.	Shale	1 ft.
Clay	2 ft.	Coal	9″
Coal	6″	Shale	6″
Clay	1″	Coal	27″
Coal	23″	Knife-edge parting.	
Altitude, 1330.		Coal	21″
		Clay	
		Altitude, 1350.	

Limestone, 1½ feet thick, shows on the right, ½ mile up Burnt Camp creek, at altitude 890.

On the right, 1¼ miles up the creek, a stripping shows the Fire-clay coal at altitude 1,030, with 20 inches of coal under 8 feet of sandy shale and then 8 feet of shaly sandstone.

On the left, 1½ miles up the creek, an unfinished prospect gives the following:

Fire-clay Coal Rider.

Clay shale	4 ft.
Coal	3″
Clay	6″
Coal	2″
Shale	16″
Coal	18″
Altitude, 1090.	

On the right, 1¾ miles up the creek, a stripping gives the following:

Fire-clay Coal.

Shale	15 ft.
Limestone	1″ to 7″
Sandstone	13″ to 3″
Coal	15″
Flint clay	5″
Shale	5 ft.
Sandstone (to creek)	3 ft.
Altitude of coal, 1030.	

BIG BRANCH.—On the left, 2 miles up Burnt Camp creek: Altitude of mouth, 1,045.

A prospect on the left and left of road, ¼ mile up the branch, gives the Fire-clay Coal Rider at altitude 1,105, with 17 inches of coal on 4 feet of shale and under 10 feet of shale and shaly sandstone.

On the left, 2⅛ miles up Burnt Camp creek, a prospect gives the following:

Fire-clay Coal Rider.

Shaly sandstone	15 ft.
Coal	3″
Shale	10″
Coal	2″
Shale about	9″
Coal about	12″
Altitude, 1095.	

The three Rider coals just given appear to be too high for such correlation as compared with the Fire-clay coal at altitude 1,030, but the latter bed being split they are probably not excessively far from the upper split.

CAMP BRANCH.—On the right, 2¼ miles up Burnt Camp creek: Altitude of mouth, 1,075.

On the right, ¼ mile up the branch, Mr. Bailey has an opening into the Hazard bed, at altitude 1,345, with 34 inches of coal under 2 feet of shale and then 6 feet of massive sandstone.

On the left, ¾ mile up the branch, Granville Cornett has a 10-yard entry into the Hindman bed, probably with 62 inches of coal at its face, fire-clay floor and shale roof. There is a large area of the bed in this vicinity, the hill tops being some 500 feet higher.

A stripping, 3½ miles up and in Burnt Camp creek, shows 2 feet or more of coal of the Hazard bed at altitude 1,340.

On the right of Middle fork, 6½ miles above Hyden, 3 yards in, one of three closed entries, the Fire-clay coal, probably, has about 30 inches of coal under 8 feet of shaly sandstone, at altitude 1,065. The bed lies on a well marked bench here.

JOHNS CREEK.

On the left, 7¾ miles above Hyden: Altitude of mouth, 870.

RIGHT FORK.—On the right, ¼ mile up Johns creek: Altitude of mouth, 910.

On the right, ½ mile up and at the fork, W. Morgan has a wet entry with the following section at its mouth:

Fire-clay Coal (or Rider).

Sandstone.	
Shale	1 ft.
Coal	16″
Bituminous shale with coal	6″
Coal	16″
Altitude, 1060.	

On the right, ¾ mile up Johns creek, in a 2-yard entry, is about 26 inches of coal, probably of the Fire-clay coal bed, at altitude 1,050.

The same bed or a higher seam shows in outcrop on the left and at the creek, 1 mile up it, at altitude 1,070, with 29 inches of coal on one foot of sandstone and under 4 feet of shale.

The possibility of the Fire-clay coal bed here being split up as reported of it on Burnt Camp creek renders correlation of these small coals particularly difficult.

On the left of a right drain of Middle fork, 8½ miles above Hyden, B. Morgan has a 2-yard entry and stripping from which the following section was obtained:

Hamlin Coal.

Shaly sandstone	5 ft.
Coal	3″
Shale	12″
Coal	9″
Shale	2″
Coal	5″
Shale	1″
Coal	6″
Black slate	1″
Sandstone.	
Altitude, 1150.	

LOWER BAD CREEK.

On the left by the path, ⅝ mile up this creek, an outcrop gives a following section. The same bed shows on the right, ⅞ mile up the creek with section as follows:

Fire-clay Coal.

On Left.		On Right.	
Sandstone.		Sandstone	1½ ft.
Shale	1½ ft.	Shale	2 ft.
Coal	6″	Hard sandstone	3″ to 6″
Flint clay	6″	Coal	5″
Clay.		Black jack	6″
Altitude, 1020.		Clay	9″
		Sandstone to creek	5 ft.
		Altitude of coal, 1015.	

The black jack is a mixture of bituminous clay, black slate and sulphur.

On the right, 150 yards farther up stream and at its level an outcrop gives the following:

Fire-clay Coal Rider.

Shale	3 ft.
Coal	6″
Shale	5 ft.
Coal	16″
Shale	5 ft.
Coal	4″
Clay	2 ft.
Sandstone.	
Altitude, lowest coal, 1055.	

An outcrop on the left, 1¾ miles up the creek, 5 feet above it, shows 15 inches of coal of the Hamlin bed, at altitude 1,165, with 1 foot of shale and then 2 feet of clay below it and 12 feet of shale covering.

BONNET ROCK BRANCH.—On the right, 3¼ miles up Lower Bad creek: Altitude of mouth, 1,255.

On the right, ⅛ mile up the branch, John Hoskins has a 15-yard entry with the following bed section at its face:

Hindman (?) Coal.

Sandstone	5 ft.
Coal	2″
Knife-edge parting.	
Coal	36″
Shale	9″
Coal	22″
Altitude, 1495.	

The amount of coal in this opening and in that at the head of Camp branch of Burnt Camp creek, seems to warrant their correlation as of the Hindman bed, although in each case they are about 100 feet lower than was to be expected.

MARION FORK.—On the right, 4⅞ miles up Lower Bad creek: Altitude of mouth, 1,325.

On the left, at the mouth of the branch, Thomas Hoskins has a covered stripping, partly opened while visited, from which the following approximate section was obtained:

Hazard Coal.

Coal stain.	
Shale	8 ft.
Coal	16″
Shale	1″
Coal	2″
Shale	5″
Coal	20″
Fire-clay.	
Sandstone.	
Altitude, 1380.	

The sandstone under the coal seems to correspond with the top of a prominent cliff along the valley below, at altitude 1,350, on the John Hoskins place, 145 feet below his entry, an interval about equal to that heretofore found between the Hazard and Francis beds.

A bench mark on the right, 10¼ miles above Hyden, 80 yards below Stinnett creek, is at altitude 901.

STINNETT CREEK.

On the right, 10¼ miles above Hyden: Altitude of mouth, 900.

On the right, ¼ mile up the creek, a 2-yard entry gives the following bed section:

Fire-clay Coal Rider. (?)

Shale	10 ft.
Coal	1″
Black slate	3″
Coal	21″
Altitude, 1085.	

LITTLE STINNETT CREEK.—On the right, ⅞ mile up Stinnett creek: Altitude of mouth, 945.

On the left, ¼ mile up this creek, John Pace has a wet entry into the Fire-clay Coal Rider (?), at altitude 1,075, of the same thickness as the preceding, but possibly all coal. Floor and roof are of sandstone, the latter shaly.

On the left, 1 mile up Stinnett creek, an outcrop at altitude 950 shows coal 11 inches thick, with partings of 1 and of 2 inches, on 6 inches of bituminous shale and then hard sandstone and under 10 feet of sandstone.

On the left, 2¾ miles up the creek, 10 feet above it, a stripping and outcrop give the following:

Hamlin Coal.

Shaly sandstone	20 ft.
Sandstone	3 ft.
Coal	17″
Shale to shaly sandstone	15 ft.
Coal	6″
Altitude, lower coal, 1170.	

At 3 miles up the creek is a cliff with top at altitude 1,205, not far under the Haddix coal.

On the left, 3¼ miles up the creek, an outcrop shows the following:

Haddix Coal.

Shale	30 ft.
Limestone	1½ ft.
Black slate with coal	½ ft.
Calcareous sandstone	1 ft.
Thin coal in creek.	
Altitude, 1250.	

LICK FORK.—On the right, 3⅞ miles up Stinnett creek: Altitude of mouth, 1,285.

On the right of a left branch, at its mouth, ½ mile up Lick fork, a prospect, partly closed, shows 18 inches or more of coal, of which the middle half is cannel, the upper 3 inches of the cannel block being a rich, fine grain bituminous coal. This is probably of the Flag bed, although, at altitude 1,340, it appears to be too low. A part, at least, of this discrepancy can be accounted for by the fact that Lick fork and Stinnett creek for a mile below run nearly east and up the dip of strata. The coal is a strong reminder of the Eli Collett coal on Bowen creek near its head, altitude 1,520, also doubtfully referred to the Flag bed.

BIG BRANCH.—On the right, 4¾ miles up Stinnett creek: Altitude of mouth, 1350.

On the left, ⅜ mile up and at the branch, James Bowling has a prospect with 5 inches of coal with fire-clay floor and roof of 6 inches of black slate and 5 feet of shale above it. At altitude 1,380 it seems most likely to be under the Lick branch coal and to correspond to that reported 10 feet under the Collett coal of Bowen creek.

GREASY CREEK.

On the left, 11¼ miles above Hyden: Altitude of mouth, 900.

On the left, ¼ mile up the creek, in a 2-yard entry, and on the left, 1½ miles up the creek, 35 feet above it, in a 1-yard entry, are the bed sections following:

Whitesburg Coal.

¼ Mile Up.		1½ Miles Up.	
Sandstone	8 ft.	Laminated sandstone	2 ft.
Coal	6″	Shale	6″
Shale	10″	Coal	5″
Coal	2″	Shale	15″
Shale	2″	Coal	2″
Coal	1″	Shale	4″
Knife-edge parting.		Coal	5″
Coal	3″	Shale	2″
Shale	2″	Coal	1″
Coal	1″	Shale	1″
Knife-edge parting.		Coal	1″
Coal	17″	Shale	4″
Altitude, 980.		Splint coal about	16″
		Altitude, 975.	

ROUND HOLE BRANCH.—On the left, 2½ miles up Greasy creek: Altitude of mouth, 950.

On the left, ⅛ mile up the branch, is a closed prospect into thin coal of the Whitesburg bed at altitude 980.

A stripping on the right of a right drain, ¼ mile up Round Hole branch, shows the following:

Fire-clay Coal and Rider.

Shale	10 ft.
Coal	1 ft.
Fire-clay.	
Sandstone	25 ft.
Coal	18″
Black slate	6″
Fire-clay	6″
Sandstone	5 ft.
Altitude, lower coal, 1160.	

UPPER BAD CREEK.—On the left, 2⅞ miles up Greasy creek: Altitude of mouth, 962.

A stripping on the left, ¼ mile up the branch, gives 20 inches of coal under 5 feet of shale, of the Whitesburg bed, at altitude 995.

At Elias Howard's, 3¼ miles up Greasy creek, the Whitesburg bed, at altitude 1,000, has 31 inches of coal under sandstone roof and with a cliff immediately below it. A 12-inch coal under shale, exposed 40 feet higher, is probably one of the upper seams of the same bed.

WILDER (FORMER LICK?) BRANCH.—On the left, 3½ miles up Greasy creek: Altitude of mouth, 975.

On the left, at the mouth of this branch, an 8-yard entry gives the following bed section 1 yard in:

Whitesburg Coal.

Shaly sandstone	4 ft.
Coal	24″
Slaty and bony coal	10″
Black slate, thin.	
Sandstone	25 ft.
Altitude of coal, 1000.	

Eight feet above the entry is 4 inches more of coal under 4 feet of shale.

At ¼ mile up the branch the Fire-clay coal was formerly found, 24 inches of coal, at altitude 1,110, under 30 feet of sandstone, and the Hamlin bed, 21 inches of coal, at altitude 1,235, under 15 feet of massive sandstone. These two openings and the one next below Wilder branch may have been ½ mile farther up Greasy creek, in which case their altitudes are 10 feet higher than as given.

On a right branch, 4 miles up Greasy creek, a closed entry on the left at the mouth of the branch, shows the Whitesburg bed, at altitude 1,020, to have upper seams with partings and about 2 feet of shale parting above its main lower seam.

A prospect on the left, ⅛ mile up the branch, gave the following section:

Fire-clay Coal.
⅛ Mile Up.

Shaly sandstone	20 ft.
Coal	23″
Bituminous shale	6″
Clay	1 ft.
Altitude, 1070.	

On the left, 4¼ miles up Greasy creek, Elisha Howard has the following section in a 2-yard entry and stripping:

Whitesburg Coal.

Shaly sandstone	15 ft.
Coal	3″
Shale	4″
Coal	5″
Shale	7″
Coal	1″
Shale	2″
Coal	2″
Shale	3½ ft.
Splint coal	23″
Massive sandstone to creek	25 ft.
Altitude, 1010.	

On the right, 4¾ miles up the creek, 5 feet above it, a closed entry gives the altitude of the Whitesburg bed, as 1,000.

On the left, 7½ miles up Greasy creek, seams of the Whitesburg bed are at stream level, altitude 1,025.

HONEY BRANCH.—On the right, 7½ miles up Greasy creek: Altitude of mouth, 1,025.

What appears to be the upper seam of the Whitesburg coal was formerly found, 12 inches thick, under 10 feet of sandstone, at altitude 1,060. Also the following was found, ¼ mile up the branch:

Fire-clay Coal.

Splint coal	29″
Clay	7″
Coal	4″
Altitude, 1125.	

On a right branch, ¼ mile up Honey branch, on the right, ¼ mile up the right branch, the Fire-clay coal, at altitude 1,150, is 16 inches or more thick, under 2 feet of shale.

On the left, 3/8 mile up Honey branch, the following was obtained in a 2-yard entry:

Fire-clay Coal.

Sandstone	4 ft.
Shale	3 ft.
Coal	28″
Brown flint clay	2″
Light clay	6″
Coal	6″

Altitude, 1145.

The following coals were found on this branch in early prospecting toward its head:

Flag Coal.

Sandstone	30 ft.
Shale	2 ft.
Coal	24″

Altitude, 1565.

Hazard Coal.

Massive sandstone	15 ft.
Clay	11″
Coal	21″

Altitude, 1475.

Haddix Coal.

Sandstone	20 ft.
Coal	thin

Altitude, 1405.

Hamlin Coal.

Sandstone	20 ft.
Coal	4″
Shale	2½ ft.
Coal	3″
Shale	2 ft.
Coal	19″

Altitude, 1260.

Fire-clay Coal Rider.

Sandstone	8 ft.
Coal	3″
Sandstone	8 ft.

Altitude, 1200.

The difference in altitude of the Fire-clay coal openings on this branch is due in part to pitch of strata and in part to barometric inaccuracy. The actual interval from that bed to the Hamlin and from the latter to the Haddix is probably somewhat less than is indicated and for the same reasons.

ELK CREEK.—On the right, 8½ miles up Greasy creek: Altitude of mouth, 1,034.

On the left, 1/8 mile up the branch, Henry M. Chappell has a 25-yard entry with the following section at its face:

Whitesburg Coal.

Shaly sandstone.	
Coal	1″
Shale	3″
Coal	5″
Shale	8″
Coal	1″
Shale	4″
Coal	1″
Shale	3″
Coal	25″

Altitude, 1050.

On the left, 1¼ miles up the creek, J. F. Chappell has a 6-yard entry with the following bed section 2 yards in:

Fire-clay Coal.

Shale	8 ft.
Coal	23″
Bone coal	1″
Flint clay	6″
Coal	4″
Fire-clay.	
Sandstone to creek	20 ft.

Altitude of coal, 1155.

On the right, 1⅜ miles up the creek, the same bed, at altitude 1,165, has only 16 inches of coal on common fire-clay and under 8 feet of shale.

On the right, 9½ miles up Greasy creek, in a 2-yard entry is the following bed section:

Whitesburg Coal.

Shaly sandstone	1 ft.
Coal	3″
Shale	3″
Coal	5″
Shale	3″
Coal	2″
Shale	3″
Coal	7″
Shale	12″
Coal	25″
Clay and shale	4 ft.
Sandstone to creek	4 ft.

Altitude of coal, 1050.

Of the lowest seam of coal the upper half is a mixed hard and soft slickenseit, wholly shapeless, and the lower half good splint coal.

BRITTON BRANCH.—On the left, 10 miles up Greasy creek: Altitude of mouth, 1,040.

On a right branch, ¼ mile up Britton branch, on the right, ⅛ mile up the right branch, 5 feet above it, a 5-yard entry has the following bed section at its face, the upper coal seam reduced from 29 inches at the mouth of the entry:

Fire-clay Coal.

Shaly sandstone	8 ft.
Coal	26″
Flint clay	6″
Coal	6″

Altitude, 1120.

On the right, 12 miles up Greasy creek: Altitude of mouth, 1,070.

FEDS BRANCH.—On the left, 1 mile up Laurel fork: Altitude of mouth, 1,108.

A stripping on the right, ⅛ mile up the branch, gives the following:

Fire-clay Coal.

Sandstone	20 ft.
Coal	26″
Flint clay	6″
Hard splint coal, about	5″
Coal	11″

Altitude, 1135.

When first seen, ¼ mile up the branch, the bed showed 28 inches of coal above, 6 inches below the flint clay, a shale floor and roof and altitude 1,145.

LOWER DOUBLE BRANCH.—On the right, 2¼ miles up Laurel fork: Altitude of mouth, 1,190.

Early prospecting on this branch, at its mouth, gave the following section:

Fire-clay Coal.

Sandstone	5 ft.
Coal	11″
Shale with coal	6″
Coal	25″
Shale	3″
Coal	3″

Altitude, 1225.

On the point of the hill between the two Double branches was also found the following:

Hamlin Coal.

Sandstone	10 ft.
Shale	3 ft.
Coal	9″
Shale	1″
Coal	25″
Shale	8″
Coal	2″

Altitude, 1360.

UPPER DOUBLE BRANCH.—On the right, 2¼ miles up Laurel fork: Altitude of mouth, 1,190.

An early prospect near the mouth of this branch and a recent measure at the W. C. Schell, 2-yard entry on the right, ⅛ mile up the branch, gave the following sections:

Fire-clay Coal (and Rider?)

Old Prospect.		Entry.	
Sandstone.		Sandstone	5 ft.
Shale	5 ft.	Shale (with 2 coals)	6″
Coal	1″	Clay	20″
Shale	3″	Coal	2″
Coal	1″	Shale	5″
Shale	21″	Coal	23″
Coal	2″	Clay	1″
Shale	5″	Coal	3″
Coal	30″	Clay	1″
Clay	1″	Coal	26″
Coal	29″	Shale with coal	9″
Clay	2″	Coal	3″
Coal	10″	Shale to branch	2 ft.
Altitude, 1225		Altitude, 1240.	

These many seamed and varying sections appear to correlate the bed with the Whitesburg, split up in the same manner on Greasy creek below Laurel fork and elsewhere, but nothing was noted from Feds branch up to this point to indicate a rise of strata sufficient to bring the Whitesburg bed above drainage. A like expansion of the Fire-clay coal bed is noted on Peter branch, Beech fork, 4¼ miles northwest of this entry.

Farther up the branch was formerly discovered 18 inches of coal under 20 feet of sandstone, at altitude 1,315, which is probably of the Hamlin bed.

The following was found probably ¾ mile up the branch:

Flag Coal.

Coal	8″
Shale	25″
Coal	4″
Altitude, 1630.	

At 1½ miles up the branch, ¼ mile above Nicholas Schell's house, the following was opened:

Helton Coal.

Shale.	
Coal	7″
Shale	11″
Coal	12″
Shale	15″
Coal	3″
Shale	3″
Coal	16″
Shale	1″
Coal	6″
Altitude, 1975.	

A coal stain was also found at altitude 1,975, and iron ore 15 feet higher.

The hill rises here to an altitude of over 2,300 feet, giving ample mining area to the Helton coal.

On the left, 2¾ miles up Laurel fork and at its level, a 5-yard entry gives the following bed section:

Fire-clay Coal.

Sandstone	20 ft.
Clay	3 ft.
Shale with coal	1 ft.
Coal	29″
Clay	1″
Coal	(?)
Altitude, 1240.	

POSSUM HOLLOW.—On the right, 4¼ miles up Laurel fork: Altitude of mouth, 1,390.

On a left branch, ⅜ mile up the hollow, ⅜ mile up and in its right fork, John Howard has a prospect with the following section:

Flag Coal

Sandstone.	
Shale	3 ft.
Coal	14″
Shale	6″
Coal	4″
Shale	6 ft.
Coal	1″
Shale	2 ft.
Coal about	30″
Black slate	4″
Bituminous shale	1½ ft.
Coal more than	18″
Interval covered	1 ft.
Coal	(?)

Altitude, 1835.

A closed prospect on a broad bench and by Mr. Howard's house, ¼ mile up and at the head of the same right fork, is in the Helton bed at altitude 2,095.

BILL (GILL) BRANCH.—On the left, 4¾ miles up Laurel fork: Altitude of mouth, 1,440.

The right fork is ¼ mile up the branch. On the right, probably about ¾ mile up the fork, an early prospect gave the following section:

Above Helton Coal.

Sandstone.	
Shale with iron ore	4 ft.
Coal	9″
Shale	16″
Coal	32″

Altitude, 2130.

The iron ore indicates a bed 70 feet above the Helton.

On the left, 6 miles up Laurel fork, a wet entry gives approximately the following bed section 3 yards in:

Flag Coal

Sandstone	3 ft.
Coal	11″
Clay	1″
Coal	9″
Clay	3″
Coal	18″

Altitude, 1830.

The upper half of the bottom coal is slickenseit.

On the left, 6¼ miles up Laurel fork, at its forks (altitude, 1,588), and the town of Incline, a now abandoned opening into the Hamlin bed, at altitude 1,595, gave 39 inches of coal under 5 feet of shale. The coal is slickenseit, apparently rich in bitumen and heavy in ash. Coal from the entry, ¼ mile below, although much less convenient, has proved more satisfactory than from this bed, which nowhere yields very good coal and is usually thin.

WHITE OAK CREEK.—On the left, 12⅜ miles up Greasy creek: Altitude of mouth, 1,077.

A bench mark on the right, 600 feet up the creek, is at altitude 1,088.

On the right, at the mouth of the creek, is the following exposure:

Whitesburg Coal.

Shale	4 ft.
Sandstone	6″
Coal	3″
Covered interval	3 ft.
Shaly sandstone	3 ft.
Shale	1 ft.
Coal	1 ft.
Clay and shale to creek	8 ft.

Altitude, 1080.

An exposure on the left, ¾ mile up the creek shows 5 inches of coal on 3 feet of clay and under 20 feet of sandstone, at altitude 1,105.

On the left of a right branch, ¾ mile up the creek, ⅛ mile up the branch, the following was formerly found:

Fire-clay Coal and Rider.

Sandstone	15 ft.
Coal	18″
Sandstone	15 ft.
Shale	1 ft.
Coal	33″
Flint clay	5″
Coal	7″

Altitude, 1160.

On the left, 1 mile up the creek, the Thacker 4-yard entry (in a spring house) has the following section at its face:

Fire-clay Coal.

Shale.	
Coal	30″
Flint clay	4″
Coal	5″
Altitude, 1140.	

An exposure on the left, 2 miles up the creek, gives the following exposure:

Fire-clay Coal Rider. (?)

Sandstone	10 ft.
Shale	3 ft.
Sandstone	2 ft.
Shale	1 ft.
Coal	8″
Clay	2 ft.
Shaly sandstone to creek	3 ft.
Altitude, 1210.	

Strata rising southward up stream, nearly or quite as fast as the stream bed, an outcrop, 2⅛ miles up the creek, of 9 inches of coal, at altitude 1,240, with a foot of shale below it to the creek, a foot of shale and then one of sandstone above it, is evidently of the same seam as the preceding.

A bench mark on the left at the base of the hill and 100 yards beyond a left branch, at Templeton's (former C. K. York's), 3¼ miles up the creek, is at altitude 1,287.

On the right at this place the following coals were found:

Francis Coal.

Sandstone	5 ft.
Shale	1 ft.
Coal	4″
Shale	1″
Coal	3″
Altitude, 1660.	

Flag Coal

Coal	14″
Altitude, 1590.	

Hazard Coal (Upper Split).

Shale	3″
Coal	3″
Shale	35″
Coal	9″
Altitude, 1525.	

Hazard Coal (Lower Split).

Sandstone	5 ft.
Shale	4 ft.
Sandstone	1 ft.
Coal	19″
Shale	8 ft.
Coal	1″
Shale	12″
Splint coal	15″
Altitude, lower coal, 1470.	

Fire-clay Coal Rider.

Shaly sandstone	3 ft.
Shale	8 ft.
Coal	2″
Shale	2″
Coal	8″
Altitude, 1285.	

PACE TRACE.—On the left, 3¾ miles up White Oak creek: Altitude of mouth, 1,340.

On the left, 1¼ miles up this branch, an early prospect on John Baker's land disclosed the following, the upper seam soft from weathering:

Helton Coal.

Coal	30″
Shale	11″
Coal	53″
Altitude, 1855.	

Sandy iron ore, corresponding to that on across the ridge on Baker fork of Wolf creek and on the head of Upper Double branch, was found at altitude 1,930.

On the right of the road from White Oak creek, 30 yards before reaching the top of the high peak at the head of this branch, on the head of Upper Bad creek, is a bench mark at altitude 2,027.

MATT'S HOLLOW.—On the left, 4½ miles up White Oak creek: Altitude of mouth, 1,390.

On the right, ½ mile up the hollow, a former John Turner opening, now B. F. Miniard, covered stripping, has the following section:

Hazard Coal.

Shale	8 ft.
Coal	2″
Shale	10″
Splint coal	36″
Clay.	
Altitude, 1480.	

On the left, 4⅜ miles up the creek, the following coals, as at York's, were formerly found:

Hazard Coal (Upper Split).

Heavy coal stain.
Altitude, 1515.

Hazard Coal (Lower Split).

Bituminous coal and cannel slate	9″
Covered interval	7 ft.
Yellow shale	2 ft.
Coal	17″
Altitude, 1485.	

On the left of a right branch, 4⅝ miles up the creek, near the mouth of the branch, the same coals were found again as follows:

Hazard Coal (Upper Split).

Shale	4″
Coal	3″
Shale	9″
Coal	9″
Altitude, 1540.	

Hazard Coal (Lower Split).

Coal	14″
Covered interval	7 ft.
Yellow shale	2 ft.
Coal	8″
Shale	2″
Coal	4″
Altitude, 1510.	

BEATTY FORK.—On the left, 5 miles up White Oak creek: Altitude of mouth, 1,440.

On the right, ⅛ mile up the fork, John Turner has a 6-yard entry with the following bed section 2 yards in:

Hazard Coal (Lower (?) Split).

Sandstone	2 ft.
Shale	8 ft.
Coal	1″
Shale (with coal)	9″
Block coal	3″
Splinty coal	32″
Altitude, 1530.	

On the left, 14½ miles up Greasy creek, 14 inches or more of the Fire-clay coal is exposed, at altitude 1,160. Over it is 8 feet of shaly sandstone and then 15 feet massive.

TANTROUGH BRANCH.—On the left, 14¾ miles up Greasy creek: Altitude of mouth, 1,114.

A stripping on the left, ⅛ mile up the branch gives the following section:

Fire-clay Coal Rider.

Sandstone	5 ft.
Shaly sandstone	5 ft.
Cannel coal	38″
Black slate	½″
Hard fire-clay.	
Altitude, 1155.	

The cannel has every appearance of excellent quality. It has been used for many years in the neighborhood and is highly commended, but its area as cannel is prob-

ably very small. There is a decided northerly dip at this point, the reverse of that on White Oak creek, two to three miles north west.

LEWIS CREEK.—On the left, 15 miles up Greasy creek: Altitude of mouth, 1,115.

The following section and analysis of my sample are from a former opening ½ mile up the creek:

Fire-clay Coal.

Sandstone	5 ft.
Shale	1 ft.
Coal	37″
Flint clay	6″
Coal	7″
Altitude, 1150.	

Chemical Report No. 2735.

Moisture	1.72
Volatile combustible matter	35.02
Fixed carbon	57.60
Ash (light brownish gray)	5.66
	100.00
Sulphur	0.599
Coke (spongy)	63.26
Specific gravity	1.251

"A somewhat weathered sample of what seems to be a good splint coal." The upper seam is partly splint coal inclined to slickenseit.

The Rider, opened 25 feet higher, has 13 inches of good cannel coal on 10 inches bituminous and under shale roof.

RIGHT FORK.—On the right, 1 mile up Lewis creek: Altitude of mouth, 1,205.

On the left, ⅛ mile up and at the fork, is 2 inches of coal in black slate, at altitude 1,230. Fossil limestone in the creek just beyond is at altitude 1,250.

The following section, with bottom at stream level, is exposed ½ mile up the fork:

Hamlin Coal.

Laminated series	50 ft.
Rough sandstone Cliff	20 ft.
Coal	16″
Limestone	1″ to 2″
Coal	5″
Shale	5 ft.
Hard laminated sandstone	1 ft.
Black slate	1 ft.
Coal	½ ft.
Black slate	½ ft.
Fire-clay	1 ft.
Altitude (lower coal), 1295.	

On a left branch, 2 miles up Right fork, on the right at the mouth of the branch, Felix Lewis has a closed 2-yard entry showing 1½ feet of coal and having possibly twice as much. Over it is 6 feet of rough sandstone. At altitude 1,545 it is probably of the Hazard bed.

A nearly covered prospect on the right, 15⅛ miles up Greasy creek, shows the following section:

Fire-clay Coal and Rider.

Shale	4 ft.
Bituminous and cannel coal	2 ft.
Shale	2½ ft.
Coal	2 ft.
Flint clay	4″
Coal	6″
Altitude, 1155	

The two following sections are of J. B. Miniard openings, one on the left, 15¾ miles up Greasy creek, and one on the right, 16 miles up the creek:

Fire-clay Coal.

On Left.		On Right.	
Coal stain.		Shaly sandstone	5 ft.
Shale	15″	Coal	19″
Coal	45″	Shale, coal and sandstone	15″
Altitude, 1160.		Coal	21″
		Altitude, 1160	

The two following sections are of a Miniard 2-yard entry on the right, 17 miles up the creek and one of a cliff exposure on the left, 17¼ miles up:

Fire-clay Coal. On Right.		Rider. On Left.	
Sandstone	15 ft.	Shaly sandstone	10 ft.
Coal	30″	Coal	22″ to 30″
Flint clay	6″	Shale and clay	2 ft.
Coal	5″	Shaly sandstone	8 ft.
Altitude, 1170.		Place of Fire-clay coal	5 ft.
		Sandstone to creek	10 ft.
		Altitude of Rider, 1190.	

The two following bed sections are of Benjamin Miniard entries, one at the face of a 3-yard entry on the right, 17½ miles up the creek, and one now closed on the left, 17¾ miles up the creek:

Fire-clay Coal (and Rider).

On Right.		On Left.	
Shaly sandstone	20 ft.	Shale and sandstone	6 ft.
Sandy shale	2 ft.	Coal	4″
Coal	8″	Thin parting.	
Sandy shale	6 ft.	Coal	30″
Coal	4″	Flint clay	6″
Knife-edge parting.		Coal	6″
Coal	26″	Altitude, 1185.	
Flint clay	6″		
Coal	4″		
Clay.			
Sandstone to creek	15 ft.		
Altitude, lower coal, 1185.			

ABNER BRANCH.—On the right, 17¾ miles up Greasy creek: Altitude of mouth, 1,174.

On the left, ⅛ mile up this branch, the face of a 10-yard entry gives 32 inches of coal of the Fire-clay coal bed, at altitude 1,200, on a flint clay floor and under 5 feet of shale.

HALF-MILE BRANCH.—On the right, ⅝ mile up Abner branch: Altitude of mouth, 1,235.

On the left at the mouth of the branch, Israel Napier has a 6-yard entry with the following bed section at its face, approximate, the section being irregular as also is the cleavage of the coal:

Fire-clay Coal.

Sandstone	65 ft.
Sandy shale	5 ft.
Coal	28″
Clay	1″
Coal	6″
Clay	1″
Coal	12″
Altitude, 1285.	

Coal of the Whitesburg bed formerly showed in the branch, at altitude 1,245, and on the left probably ¼ to ½ mile up the branch, prospects gave the following sections:

Haddix Coal.

Massive sandstone	10 ft.
Coal	16″
Clay	
Altitude, 1625.	

Fire-clay Coal Rider.

Coal	3″
Shale	7″
Coal	13″
Shale	29″
Coal	14″
Clay	2″
Coal	14″
Cannel coal	7″
Clay	8″
Black slate	3″
Cannel coal	3″
Black slate	11″
Clay	9″
Coal	30″
Altitude, 1405.	

Though high above the Fire-clay coal the character of the section warrants the correlation.

On the right, ⅞ mile up Abner branch, Lloyd Turner has a 2-yard entry in which is the following bed section:

Fire-clay Coal.

Sandy shale	10 ft.
Coal	21″
Shale	2″
Coal	16″

Altitude, 1290.

Above this entry are 40 feet of shale and then 40 feet of laminated sandstone, apparently without other strata included, and above the sandstone Mr. Turner has a 6-yard entry on the right, 1 mile up the branch with the following bed section 2 yards in:

Fire-clay Coal Rider.

Shale	5 ft.
Coal	9″
Shale	5 ft.
Coal	29″
Shale about	16″
Coal about	22″

Altitude, 1370.

On the right at and 15 feet above the mouth of Spurlock branch, 1¾ miles up Abner branch, in a 2-yard entry is a following bed section.

On the left, 1¾ miles up Abner branch, 100 yards above Spurlock branch, a prospect gives a following section, the bottom 6 inches in water and not seen:

Fire-clay Coal Rider.

Entry.

Sandstone.	
Shale	25 ft.
Coal	3″
Shale	9″
Coal	12″
Clay	6″
Coal	18″
Clay and shale	11″
Coal	7″
Clay	5″
Coal	33″

Altitude, 1410.

Prospect.

Shale	25 ft
Coal	3″
Shale	7″
Coal	7″
Shale	5″
Coal	1″
Clay	6″
Coal	12″
Clay	0-1″
Coal	5″
Clay	14″
Coal	2″
Shale	2″
Coal	25″
Clay	2 ft.

Altitude, 1415.

The two following sections are from a William Huff entry and outcrop on the right, 18¼ miles up Greasy creek, 30 yards below the mouth of Meeting-House branch and in a 2-yard entry on the left, 18⅜ miles up the creek:

Fire-clay Coal.

On Right.

Clay and shale	3 ft.
Coal	24″
Clay	3″
Coal	2″
Shale	6″
Coal	28″
Flint clay	5″
Coal	5″
Under clay.	
Shale	3 ft.
Hard sandstone to creek	4 ft.

Altitude, 1195.

On Left.

Massive sandstone	20 ft.
Clay and shale	3 ft.
Coal	24″
Clay	2″
Coal	2″
Shale	6″
Coal	28″
Hard floor.	

Altitude, 1205.

GABE'S BRANCH.—On the right, 19 miles up Greasy creek: Altitude of mouth, 1,208.

On the right, ⅛ mile up the branch, a 4-yard entry gives 20 inches of coal, probably the upper seam of the Fire-clay coal, under 20 feet of sandstone and at altitude 1,250.

A cliff on the right, ¼ mile up the branch, then shows the Rider, 2 feet of coal in the middle of 40 feet of shale, at altitude 1,300. This coal formerly was exposed in the branch, ½ mile up it, with the following section:

Fire-clay Coal Rider.

Laminated sandstone	10 ft.
Shale	4 ft.
Coal (with shale partings)	30″
Black slate (with coal) about	12″
Coal	7″

Altitude, 1310

ELDRIDGE BRANCH.—On the right, 1½ miles up Gabe's branch: Altitude of mouth, 1,430.

Ground Hog Hollow is on the left, ¾ mile up Eldrige branch. On the right, ⅛ mile up the hollow, William Creech has a prospect with a section following.

On the right, 1½ miles up Eldridge branch, 5 feet above it, Mr. Creech has a 12-yard entry with bed section, 8 yards in, also following:

Hazard Coal.

Prospect.		Entry.	
Sandstone	3 ft.	Sandstone	5 ft.
Coal	16″	Coal	17″
Shale	2″	Shale	1″
Coal	8″	Coal	8″
Shale	9″	Shale	6″
Coal	?	Coal	17″
Altitude, 1630.		Altitude, 1650.	

On a right branch, 1⅞ miles up Gabe's branch, on the left, ¼ mile up and 15 feet above the right branch, John Huff has a 6-yard entry with the following section at its mouth:

Hazard Coal.

Sandstone	5 ft.
Coal	17″
Clay	1″
Coal	10″
(?)	
Altitude, 1635.	

On the left, 19⅛ miles up Greasy creek, 15 feet above it, a 10-yard entry has a following section at its mouth. An unfinished prospect on the right, 19¼ miles up and at the creek has approximately the section also following:

Fire-clay Coal.

Entry.		Prospect.	
Sandstone	20 ft.	Shale	6 ft.
Shale	4 ft.	Coal	30″
Coal	22″	Shale	8″
Soft clay	2″	Coal	28″
Coal (reported)	36″	Flint clay	5″
Flint clay.		(?)	
Coal (reported)	6″	Altitude, 1220.	
Altitude, 1225.			

LICK BRANCH.—On the left, 20 miles up Greasy creek: Altitude of mouth, 1,240.

On the left, ½ mile up the branch, David Turner has a 12-yard entry into what is probably the upper split of the Hazard bed, at altitude 1,560, giving 30 inches of coal, 4 yards in, under 5 feet of shale and then sandstone. There is a bench 20 feet below the entry and iron ore 40 feet below the bench; altitude 1,520.

SANG BRANCH.—On the left, 20½ miles up Greasy creek: Altitude of mouth, 1,265.

On the right, ¼ mile up the branch, a 10-yard entry gives the following bed section, 2 yards in, the bottom 6 inches not seen:

Hazard Coal.

Sandstone	4 ft.
Coal	17″
Shale (with coal)	12″
Coal	40″
Altitude, 1555.	

The upper 6 inches of the 40-inch coal seam is shelly.

On a left branch with mouth at altitude 1,290, 21 miles up Greasy creek, on the left, at its mouth, Mrs. Hilda Hash has a 2-yard entry giving the following section, the bottom 9 inches not seen:

Hazard Coal.

Sandstone	20 ft.
Coal	24-28″
Clay shale	24″
Coal	51″

The upper 12 inches of the 51-inch seam is somewhat slaty, the remainder block coal.

BIG LAUREL CREEK.—On the left, 21½ miles up Greasy creek: Altitude of mouth, 1,320.

On the left, ¼ mile up the creek, in a short entry is the following section:

Hazard Coal (Lower Split).

Coal	32″
Bone coal	4″
Coal	3″
Black slate	4″
Clay.	
Altitude, 1590.	

On the right, ¼ mile up the creek, in the point of a spur, a 2-yard abandoned entry gives the upper one of the two following sections, the lower seam of coal having 1 foot visible and reported to be 45 inches thick.

A 15-yard entry 100 yards farther up stream gives the lower bed section, 10 yards in, the slaty coal at the bottom not mined:

Hazard Coal (Upper Split).

Laminated sandstone.	
Clay shale	8 ft.
Coal	24″
Shale (with coal)	2½ ft.
Coal	2 ft.(?)
Altitude, 1625.	

Hazard Coal (Lower Split).

Shale (rotten sandstone)	5 ft.
Coal	39″
Black slaty coal about	4″
Altitude, 1600.	

On the right, 1¾ miles up Big Laurel creek, a long entry gives the following bed section 2 yards in:

Hazard Coal (Upper (?) Split).

Sandstone	15 ft.
Coal	25″
Shale	5″
Coal	5″
Altitude, 1665.	

On the right, 2¼ miles up the creek, the Intermountain Coal and Lumber Co. has a 6-yard entry into the

same bed, at altitude 1,675, having at its face 35 inches of coal and one parting and under 15 feet of sandstone.

On the right, 3⅜ miles up the creek, ⅛ mile above and 10 feet higher than the mouth of Archer branch, the bed is opened again, at altitude 1,710, with coal reported 39 inches thick (probably including a parting) under 10 feet of sandstone.

On the right, 3¾ miles up Big Laurel creek, a closed prospect into the Hindman coal, at altitude 1,890, is reported to have 70 inches of coal with a parting of 4 inches. A large area of this coal is available here, easily to be brought to stream level when accessible by rail.

The following section was formerly obtained near the mouth of Dry fork, 22 miles up Greasy creek, with the base at its level:

Hamlin Coal.

Black slate.	
Coal	16″
Shale	5 ft.
Coal	14″
Shale	10″
Coal	9″
Sandstone	5 ft.
Black slate	11″
Coal	15″
Clay	2″
Sandstone	15 ft.
Coal	5″
Shale with bastard limestone	5 ft.
Coal	2″
Black slate	4″
Sandstone (?)	15 ft.
Altitude (lowest coal), 1420.(?)	

On the left, 22 miles up Greasy creek, above Dry fork, B. F. Lewis has a 15-yard entry with the following bed section 3 yards in:

Hazard Coal (Upper (?) Split).

Sandstone	20 ft.
Shale	0 to 2½ ft.
Coal	30″
Clay	2″
Splinty coal	15″

Altitude, 1590.

LITTLE LAUREL CREEK.—On the left, 23 miles up Greasy creek: Altitude of mouth, 1,490.

On the left, ⅛ mile up this creek, B. F. Lewis has a 6-yard entry giving the following bed section at its face:

Hazard Coal.

Cliff sandstone	15 ft.
Coal	31″
Knife-edge parting.	
Coal	15″

Altitude, 1665.

The lower seam of coal is a light weight, splinty slickenseit. The upper seam has a distinct division plane 20 inches from the top. Though 100 feet nearer Greasy creek level here than at the mouth of Big Laurel creek the bed evidently rises more rapidly with the greater acclivity of the stream bed above Big Laurel creek. A closed entry on the right opposite the preceding shows about 2 feet of coal in its upper seam. (Altitude 1,665.)

LEFT FORK.—On the left, ¾ mile up Little Laurel creek: Altitude of mouth, 1,600.

On the right, ¼ mile up the fork, a 2-yard entry into the Hazard bed, at altitude 1,740, has 35 inches of coal, the lower 15 inches splinty, under 10 feet of sandstone.

On the left of a left branch, at its mouth, opposite the preceding, the Hazard bed is opened at altitude 1,715, with about 30 inches of coal 2 yards in a long entry under 7 feet of sandstone.

The top of a 15-foot cliff is 20 feet below the entry and iron ore float between cliff and coal seems to have come from close under the latter.

On the right, ⅛ mile up the left branch, an incomplete prospect shows the top of the Hindman bed, at altitude 1,930, 1½ feet of coal on 3 to 5 feet of clay mixed with coal, and under 3 feet of massive sandstone, 40 feet above a broad bench.

Entries on the left, one 30 yards in, now closed, 23⅝ miles up Greasy creek, and one of 40 yards, 23⅞ miles up, gave the following bed sections:

Harlan Coal.

Lower Entry.		Upper Entry.	
Massive sandstone	4 ft.	Shale.	
Coal	22″	Coal	20″
Shale	1″	Clay	3″
Coal	10″	Coal	9″
Shale	1″	Clay	18″
Coal	2″	Coal	33″
Shale	1″	Clay.	
Coal	19″	Altitude, 1745.	

Altitude, 1740.

The section of the upper entry is variable in its 40 yards, that given being fairly representative of the whole length. The bottom coal, in part slickenseit, is particularly changeable. All the coal is bright and good looking, but it makes a considerable amount of clinker.

A locked entry on the right, 23⅞ miles up the creek, into the same bed, at altitude 1,745, has at its mouth about 5½ feet of coal including partings.

ISAAC BRANCH.—On the left, 24 miles up Greasy creek: Altitude of mouth, 1,735.

A bench mark on the left, at the mouth of the branch, beside the office of the Pine Mountain Mission School, is at altitude 1,755.8.

On the left, ½ mile up the branch, William Creech had a prospect, at altitude 1,905, possibly into the Flag bed, showing 20 inches of coal with 3 shale partings aggregating 6 inches.

Above the preceding another prospect gave the following section:

Hindman (?) Coal.

Coal	12″
Shale	5″
Coal	18″
Shale	5″
Coal	6″
Shale	10″
Coal	7″
Shale	2″
Coal	2″
Shale	4″
Coal	1″

Altitude, 2095.

Correlation here is altogether uncertain, the apparent large increase of interval from the Harlan coal being ascribed to the uplift of Pine Mountain, across Isaac branch, having affected strata on this side of the branch also.

MIDDLE FORK.

(Above Greasy Creek.)

On the right of a left drain, 11¾ miles above Hyden, a stripping gives the following section:

Whitesburg Coal.

Laminated sandstone	2 ft
Sandy shale	2 ft.
Clay shale	½ ft.
Coal	2″
Clay	1″
Slaty coal	6″
Coal	11″
Massive sandstone	10 ft.

Altitude of coal, 1050.

SALTWELL BRANCH.

On the right, 12¾ miles above Hyden: Altitude of mouth, 915.

Hughes Morgan has a half dozen entries, ¼ mile up this branch, from two of which, on the right, the following combined section was obtained:

Whitesburg Coal.

Sandstone	50 ft.
Black slate	5 ft.
Coal	7″
Shale	15″
Coal	2″
Shale	3″
Coal	6″
Shale	2″
Coal	1″
Shale	4″
Coal	46′

Shale.

Altitude, 965.

The nearly vertical cleavage planes of the bottom coal are curved and continuous through the whole 46 inches.

The bed rises northwesterly, about at a 5% rate for 200 yards up the branch, and goes below it, ⅝ mile up, at altitude 1,005, under massive sandstone.

A coal stain, probably of the Hamlin bed, was formerly found on the right, ⅛ mile up the branch, at altitude 1,100, and above it the following:

Haddix (?) Coal.

Sandstone.	
Shale	1½ ft.
Coal	3″
Shale	1″
Coal	2″
Shale	4″
Coal	10″
Shale	4″
Coal	2″
Covered interval	3 ft.
Sandstone	3 ft.
Coal	14″
Shale	5″
Coal	1″

Altitude, 1185.

A stain of the Hazard (?) coal was found here also at altitude 1,260, but the rapid dip of strata makes the correlations especially dubious.

TRACE (HARMON) BRANCH.

On the right, 12⅞ miles above Hyden: Altitude of mouth, 915.

On the right, ¼ mile up the branch, the face of a 3-yard entry gives a following bed section, the bottom coal having the same nearly vertical curved cleavage as that noted in the Saltwell branch entry. A partly covered stripping on the left, ½ mile up the creek, 5 feet above it, gives an incomplete section also following:

Whitesburg Coal.

Entry.		Stripping.	
Shaly sandstone	4 ft.	Sandstone	20 ft.
Coal	6″	Coal and 8 partings	2 ft.
Shale and clay	1 ft.	Shale	2-3 ft
Coal (with parting)	6″	Main coal seam.	
Argillaceous sandstone	6 ft.	Altitude, 985.	
Coal	26″		
Bituminous shale	2″		
Hard shale.			
Altitude, 985.			

Enclosed in the bottom of the sandstone over the stripping is a seam of coal 0 to 10 inches thick, showing the manner of disappearance of part of the many seamed coal bed.

The line of strike is shown to be northeasterly.

On the left, ¾ mile up the branch, early prospecting discovered the following coals on a steep hillside. The lowest bed is the only one which seems to admit of identification:

Sandstone	6 ft.
Shale	3″
Coal	2″
Clay	5″
Coal	10″
Shale	1″
Coal	3″
Clay	
Altitude, 1610.	

Massive sandstone	10 ft
Shale	5 ft.
Coal	5″
Clay	1″
Coal	16″
Clay	
Altitude, 1575.	

Francis (?) Coal.

Massive sandstone	15 ft.
Coal	20″
Parting	½″
Coal	9″
Altitude, 1530.	

On the left, 1 mile up the branch, an outcrop of 32 inches of coal on shale, under a 10-foot sandstone cliff and at altitude 1,465, is probably of the Francis bed.

MARTOR FORK.—On the right, 1¼ miles up Trace branch: Altitude of mouth, 1,070.

On the right, ¼ mile up the fork, a stripping gives the following:

Fire-clay Coal Rider. (?)

Shaly sandstone	8 ft.
Coal	14″
Shale	2″
Coal	9″
Altitude, 1155.	

On the right, 13 miles above Hyden, C. B. Hoskins has a 15-yard entry into the Fire-clay (?) coal, at altitude 965, having 31 inches of coal at its face, 34 inches at its mouth, on hard shale and under 2 inches of shale, then 10 feet of shaly sandstone. The entry dips southward nearly at a 10% rate.

On the right, 13¾ miles above Hyden, G. W. Hoskins has a 3-yard entry in which is the following bed section:

Fire-clay Coal. (?)

Shaly sandstone	
Shale	1 ft.
Coal	¼″
Shale	3″
Coal	24″
Altitude, 970.	

This appears to be near the foot of the southeasterly dip, strata farther up stream lying comparatively level.

On the right of a left branch, beside the road, 14¾ miles above Hyden, an outcrop shows 9 inches of coal under 5 feet of sandstone, at altitude 1,005, possibly a part of the Fire-clay Coal Rider.

A bench mark on the right, 80 yards below the mouth of Beech fork, is at altitude 952.96.

BEECH FORK.

On the left, 15 miles above Hyden: Altitude of mouth, 950.

SOAP AND TALLOW BRANCH.—On the left, 1⅜ miles up the fork: Altitude of mouth, 990.

A prospect on the right at the mouth of this branch, gives the following:

Whitesburg Coal.

Shale	3 ft.
Coal	2″
Shale	4″
Coal	5″
Shale	2″
Coal	1″
Shale	3″
Coal	2″
Shale	7″
Coal	16″

Altitude, 1030.

BEE BRANCH.—On the left, 1½ miles up Beech fork: Altitude of mouth, 1,000.

In a 1-yard entry on the right, ⅛ mile up the branch, W. S. Moseley has the following bed section:

Fire-clay Coal.

Shaly sandstone	2 ft.
Coal	23″
Flint clay	4″
Coal	13″
Shale.	

Altitude, 1080.

GEORGE'S (LICK) BRANCH.—On the left, 1⅞ miles up Beech fork: Altitude of mouth, 1,020.

In the branch and a rock-house, ¼ mile up, Mr. Moseley has a prospect with the bed section following:

Fire-clay Coal.

Sandstone	25 ft.
Shale	1 ft.
Coal	8″
Shale	1″
Coal	15″
Flint clay	6″
Coal	12″

Altitude, 1085.

On the left, 1⅞ miles up Beech fork, a prospect into the Whitesburg bed, at altitude 1,025, has 14 inches of coal under 2½ feet of shale and coal and then 20 feet of sandstone. The face of a 4-yard entry on the right, 2⅛ miles up the fork, gives 18 inches of bottom coal, at altitude 1,030, under covering like the preceding. The bed goes below drainage immediately above.

On the right, 2½ miles up Beech fork, is the following in outcrop. The shale covering a guide to correlation:

Fire-clay Coal Rider. (?)

Dark shale	10 ft.
Coal	9″
Clay	5″
Coal	4″
Clay	5″
Coal	4″
Clay	4 ft

Altitude, 1070.

STONE COAL (LONG) BRANCH.—On the right, 3¾ miles up Beech fork: Altitude of mouth, 1,053.

On the left of the left fork of this branch, ¼ mile from Beech fork, a prospect gives the following, the bottom 6 inches not seen:

Fire-clay Coal.

Shaly sandstone	8 ft.
Coal	2″
Shale	2½ ft.
Coal	5″
Shale	1″
Coal	27″

Altitude, 1115.

On a left branch with mouth at altitude 1,070, 4¼ miles up Beech fork, in the branch at its mouth is 10 inches of coal, at altitude 1,075, and 2 inches at altitude 1,080, upper seams of the Whitesburg coal again above drainage.

A prospect on the left at the forks, ¼ mile up this left branch, has the following section:

Fire-clay Coal.

Sandstone	20 ft.
Coal	1″
Shale	2″
Coal	30″
Cannel coal	4″
Soft white clay	9″
Slaty coal about	6″

Altitude, 1115.

The Fire-clay coal shows also in the right fork of the same branch, at altitude 1,115, but not exposed to measure. In a rock-house on the right at this point the Rider has 24 inches of coal on clay and under 20 feet of sandstone, and at altitude 1,140.

On the right, 4⅞ miles up Beech fork, James Wilson has a 12-yard entry of a following bed section 2 yards in.

On the left, 5 miles up the fork, Peter Wilson has a 4-yard entry, its bed section at the face also following:

Fire-clay Coal.

James Wilson.

Shaly sandstone	4 ft.
Coal	24″
Flint clay	6″
Coal	9″

Altitude, 1115.

Peter Wilson.

Shaly sandstone	10 ft.
Coal	2″
Shale	22″
Shale and coal	2″
Coal	4″
Knife-edge parting.	
Coal	20″
Cannel coal	26″
Soft white clay	9″
Coal	?

Altitude, 1135.

Comparison with the next section should leave no doubt as to the correlation of the Peter Wilson coal.

PETER BRANCH.—On the left, 5⅛ miles up Beech fork: Altitude of mouth, 1,095.

On the left, ¼ mile up the branch, William Howard has a 2-yard entry in which is a following section.

On the left and left of trail, 1¼ miles up the branch, is an outcrop also following:

Fire-clay Coal Entry.

Shale.	
Coal	1″
Shale	3″
Coal	½″
Bituminous shale	1″
Coal	5″
Shale	0-2″
Coal	26″
Flint clay	5″
Coal	5″
Clay.	

Altitude, 1150.

Haddix Coal Outcrop.

Shale	3 ft.
Coal	10″
Shale	6 ft.
Coal	11″
Shale	4″
Coal	10″
Shale over	3″

Altitude, 1365.

OLDHOUSE BRANCH.—On the right, 6 miles up Beech fork: Altitude of mouth, 1,120.

On the left, ¼ to ⅜ mile up the branch, the following section was found on the Jeremiah Ledington (now G. W. Nance) land:

Section.

Dark fossil limestone	6″ to 12″

Altitude, 1325.

Shale	3 ft.
Coal (Hamlin?)	8″–10″

Altitude, 1315.

Thin coal	altitude 1250
Sandstone	10 ft.
Shale	7 ft.
Coal	4″

Altitude, 1230.

Coal		14″
Shale and sandstone	(Rider)	5 ft.
Cannel coal		38″
Shale and sandstone		10 ft.
Coal		25″
Flint clay	(Fire-clay)	6″
Coal		11′

Altitude, 1145.

Shale and sandstone	5 ft.
Coal and shale	16″

Altitude, 1135.

The thin coal, at altitude 1,250, is at the right height for the Hamlin coal and that at altitude 1,315 nearly high enough for the Haddix.

That the cannel coal represents the Rider seems to be proven by exposures along Beech fork above Oldhouse branch. It is evidently not the same seam of cannel as that lying on the flint clay as on Peter branch. The lowest coal, seldom found under the Fire-clay coal in Leslie county, is not uncommon in Perry county.

My sample of the cannel coal gave the following results to analysis:

Chemical Report No. 2739.

Moisture	1.10
Volatile combustible matter	44.20
Fixed carbon	43.70
Ash (light gray brown)	11.00
	100.00
Sulphur	0.690
Coke (dense)	54.70

Of the three following coals found in early prospecting the middle one is on the left, 1¼ miles up the branch, the other two presumably near it. Their similarity to the three high beds found on Trace branch, 12⅞ miles up Middle fork, is noticeable.

Coal	13″
Shale	6″
Coal	10″

Altitude, 1580.

Sandstone	10 ft.
Shale	5 ft.
Coal	7″

Altitude, 1540.

Coal	12″

Altitude, 1490.

On the left, 1¾ miles up the branch (¼ mile beyond and 140 feet higher than the Silas Nance house), the following coal was opened:

Hindman (?) Coal.

Shale.	
Coal	10″
Shale	34″
Splint coal	46″
Clay	18″
Coal	2″

Altitude, 1710.

The only reason to doubt that this is of the Hindman bed is the fact of its having splint coal, which though fine looking the following analysis of my sample of the 46 inches shows to be of questionable value, even with allowance for its coming from the outcrop:

Hindman (?) Coal.
Chemical Report No. 2743.

Moisture	1.30
Volatile combustible matter	32.36
Fixed carbon	50.34
Ash (lilac gray)	16.00
	100.00
Sulphur	1.409
Coke (dense, spongy)	66.34
Specific gravity	1.502

"Seems to be somewhat weathered. Ferruginous incrustations on some pieces. Some fibrous coal apparent, but no pyrites."

Being 300 feet below the top of the hill the area of the bed in this vicinity is large.

On a left branch above the Nance house, Mr. McConathy, who did considerable detail work on this branch for the Survey, in 1891, without discovery of any new coal of importance, found the Hindman (?) coal with but one bench, 44 inches thick with a knife-edge parting one foot from the top.

On the left, 6 miles up Beech fork, G. W. Nance has a stripping, and on the left, 6¼ miles up, a 2-yard entry which give the following sections:

Fire-clay Coal Rider.

Stripping.		Entry.	
Laminated sandstone	4 ft.	Sandstone	3 ft.
Shale	1 ft.	Shale	1½ ft.
Black slate	2 ft.	Black slate	1½ ft.
Cannel coal	10″	Cannel coal	39″
Coal	12″	Altitude, 1155.	
Altitude, 1155.			

In the stripping the two kinds of coal are in one block. The cannel coal has a good fracture and appearance, but is said to decrepitate in burning.

Nearly under the preceding entry a prospect gives the following section:

Fire-clay Coal.

Shale	4 ft.
Coal	8″
Shale	1¼ to 3½ ft.
Coal	22″
Flint clay	5″
Coal	8″
Black slate	2″
Shale	9″
Coal	2″
Fire-clay	2 ft.
Altitude, 1145.	

The main bed lies nearly level. The upper coal seam and shale above it pitch up stream because of the thinning of the shale under them.

TRACE BRANCH.—On the right, 6⅜ miles up Beech fork: Altitude of mouth, 1,130.

On the right, ¼ mile up the branch, the cannel coal is reduced again to 15 inches, but has 12 inches bituminous coal directly under it, at altitude 1,170.

Outcroppings on the right, 7⅝ and 7¾ miles up the fork give the following, coal of the latter 25 feet above stream level:

Fire-clay Coal and Rider.

Sandstone cliff	20 ft.	Sandstone cliff	20 ft.
Cannel coal about	6″	Cannel coal	8″
Bituminous coal about	12″	Coal	10″
Fire-clay.		Fire-clay	1 ft.
Sandstone cliff	30 ft.	Shaly sandstone.	
Coal about	8″	Altitude of coal, 1200.	
Shale	1 ft.		
Coal (bottom not found) in fork	1 ft.		
Altitude, 1170.			

A 2-yard entry and stripping on the left, 7¾ miles up the fork and a 3-yard stripping on the right, 8 miles up, give the following sections:

Fire-clay Coal and Rider.

Sandstone cliff	20 ft.	Sandstone cliff	30 ft.
Black slate	½ ft.	Shaly sandstone	1 ft.
Cannel coal	6″	Black slate	1 ft.
Coal	14″	Cannel coal	8″
Fire-clay	1 ft.	Coal	13″
Shaly sandstone	8 ft.	Clay	5″ to 8″
Altitude of coal, 1195.		Coal	8″
		Shale	10″
		Coal in fork	2 ft.
		Altitude, 1185.	

It is remarkable that the second seam of coal above the flint clay can be identified in nearly every Fire-clay opening on Beech fork up to this point.

On the left, 80 yards below the mouth of Big branch is a bench mark at altitude 1,198.5. The Fire-clay coal and Rider are below drainage here.

BIG BRANCH.—On the right, 8¼ miles up Beech fork: Altitude of mouth, 1,195.

A stain of the Hamlin coal shows on the right in the road, ¼ mile up the branch and at altitude 1,205.

On the left, ¼ mile up a right branch, with mouth at altitude 1,430, one mile up Big branch, R. M. Wilson has a 5-yard entry with the following bed section:

Hindman Coal.

Shaly sandstone.	
Shale	4 ft.
Clay	1 ft.
Coal about	43″
Altitude, 1760.	

The bottom foot of coal, in water, was not seen. The lower 3 inches visible is a slaty splint coal. The usual bench of the Hindman bed is wanting here, but the thickness of the coal at this height warrants the correlation. The area of the bed is confined to a long narrow strip.

TOM HOSKINS BRANCH.—On the right, 9⅞ miles up Beech fork: Altitude of mouth, 1,260.

On the right, by the road, ¼ mile up the branch, Joseph Napier has a 10-yard entry into the Flag bed, at altitude 1,560, having 31 inches of coal at its face (3 inches slaty coal, 5 inches from the bottom), on fire-clay floor and with 3 feet smooth massive sandstone covering.

The Napier house, ½ mile up the branch, on a broad bench and valley widening is at altitude 1,730, about on the level of the Hindman coal.

On the right, 10¼ miles up Beech fork, William Buckhart has a 1-yard entry, on a good bench, having the following bed section:

Hazard Coal.

Laminated sandstone	6 ft
Shaly sandstone	3 ft.
Black slate	7″
Coal	34″
Shale	7″
Coal	1″
Shale	3″
Coal	3″
Shale	6″
Coal	16″
Altitude, 1545.	

The Hamlin coal shows thin in a cliff on the left, 10⅜ miles up the fork and at altitude 1,330.

Above this point strata rise rapidly southeastward.

CAWOOD BRANCH.—On the left, 10¾ miles up Beech fork: Altitude of mouth, 1,310.

In a large pool under a waterfall in the branch, ⅜ mile up it and on the right fork, the Hamlin bed has 26 inches of slickenseit coal, at altitude 1,405, under 40 feet of shale cliff with a foot of sandstone or limestone in the middle.

The following coals were found at the former G. W. Hoskins place 11 miles up Beech fork:

Francis Coal.

Sandstone	5 ft.
Coal	4″
Shale	3 ft.
Coal	6″
Clay.	
Altitude, 1805.	

Hazard Coal.

Sandstone	5 ft
Coal	17″
Shale	9″
Coal	27″
Clay more than	15″
Altitude, 1655.	

Fire-clay Coal Rider.

Sandstone	20 ft
Coal	18′
Altitude, 1390.	

On the left, 11¼ miles up the fork, the former James Duff entry has the following bed sections 8 yards in a now closed room 5 yards underground and at the present face 12 yards in:

Hazard Coal.

In Room.		In Entry.	
Sandstone	8 ft.	Sandstone	8 ft.
Coal	13″	Coal	14″
Shale	5″	Clay	2″
Coal	33″	Coal	1″
		Shale	20″
		Coal about	33″

Altitude, 1655.

Thirty yards to the left of Beech fork, 80 yards below Reuben branch a bench mark is at altitude 1,430.

REUBEN BRANCH.—On the right, 11¾ miles up Beech fork: Altitude of mouth, 1,417.

An outcrop on the left, ¼ mile up and at the branch, shows the Hamlin (?) coal, 10 inches thick, at altitude 1,470, on 4 feet of shale and clay and with 15 feet of sandstone covering.

LEFT FORK.—At the schoolhouse, ¾ mile up Reuben branch: Altitude of mouth, 1,520.

On a left branch, ⅜ mile up the fork, on the right, ¼ mile up the branch and by the trail, a stripping on a broad bench shows, under earth, about a foot of coal with 10 inches of shale below it and coal below, probably 1 to 2 feet. This, at altitude 1,900, is about the height of the Hindman coal.

On the right, 1 mile up the left branch and at its head, George W. Cooper has an entry, at altitude 2,250, with 3 feet of coal in its upper seam and 2 feet more of coal reported below a thick parting.

Above the entry a now closed prospect, at altitude 2,340, showed 2½ feet of coal on 1½ feet of shale and with 2 feet of coal below. The top of the ridge is about 150 feet higher.

RIGHT FORK.—On the right, ¾ mile up Reuben branch: Altitude of mouth, 1,900.

On the right of a right drain, 1¼ miles up this fork, ⅛ mile up the drain, Elisha Tolliver has a closed entry with a 1-yard open entry by it. Sections of these follow:

Closed Entry.

Sandstone.	
Coal (half splint)	22″
Clay	5″
Coal	28″
Shale	11″
Coal	3″
Shale and clay	3″
Coal	10″
Clay.	

Open Entry.

Shaly sandstone	3 ft.
Shale	2″
Coal	13″
Black slate	3″
Coal	1″
Shale	2″
Coal	1″
Shale	8″
Coal	27″
Shale (reported)	8″
Coal (reported)	4″

Altitude, 2060.

The 10 inches of coal at the bottom of the old entry, lost sight of, appears to have been completely forgotten.

A prospect, 1½ miles up the right fork, gave the following section.

Shale.	
Coal	9″
Shale	12″
Coal	21″
Altitude, 1975.	

This appears to be of the same bed as the lower coal of the left fork, possibly the Hindman bed.

A bench mark on a small tree on the left, 12½ miles up Beech fork, a dozen yards below Chumley branch and in front of Imlay postoffice, is at altitude 1,496.

On the left, a dozen yards above Chumley branch, is Chumley cliff, nearly 100 feet high, showing the following approximate section:

Sandstone	30 ft.
Shale	50 ft.
Fossiliferous limestone	2 ft.
Thin laminated sandstone	35 ft.
Coal	21″
Shale	3″
Coal	4″
Altitude, 1494.	

The fossil limestone is evidently the stratum of sandstone or limestone in the cliff on Cawood branch and the coal bed, now hidden in Beech fork, the Hamlin coal.

The fossil limestone in Chumley cliff is exposed in the bed of Beech fork opposite the mouth of Old-house branch; altitude 1,560. Being 35 feet above the Hamlin coal, the Fire-clay coal is about 135 feet below drainage here.

OLD-HOUSE BRANCH.—On the left, 13 miles up Beech fork: Altitude of mouth, 1,560.

On the right at the head, ¾ mile up the branch, Andrew Green has an 8-yard entry by his house with the following bed section at its face:

Shale	8 ft.
Coal	2″
Shale	5″
Coal	1″
Shale	5″
Coal	29″

Altitude, 2095.

Iron ore near the top of a round summit above the entry is at altitude 2,185.

DOSS BRANCH.—On the left, 13¼ miles up Beech fork: Altitude of mouth, 1,590.

On the left of the right fork at its mouth, ½ mile up the branch, a 10-yard entry into the Hindman bed, at altitude 1,885, has 23 inches of coal 6 yards in, under 8 feet of shale. It is probable that no search was made for a lower seam of the bed.

Near the top of the ridge on the right at the mouth of Doss branch, but with specific location not noted. Robert Ellis, at Kate Spring, and Samuel Creech, a little farther southward, have entries with the following bed sections, the lower 8 inches in each measured in water:

Ellis.

Laminated sandstone	10 ft.
Coal	18″
Shale	24″
Coal	8″
Shale	2″
Coal	9″
Shale	2″
Coal	25″

Altitude, 2200.

Creech.

Coal	8″
Shale	2″
Coal	8″
Shale	2″
Coal	33″

Altitude, 2185.

There is a large area of this coal in Kentucky ridge and the high ridges on each side of Beech fork probably contain much of it.

A bench mark, 10 yards to the right of Beech fork, at the bridge, 14¼ miles up, 6 yards to the left of the road, is at altitude 1,799.

LEFT FORK.—On the left, 14¼ miles up Beech fork: Altitude of mouth, 1,785.

At a spring on the left, ⅛ mile up the fork, a stripping shows 1½ feet of coal and clay at altitude 1,820. This is probably not far from the level of the Hazard bed, but proximity to Pine Mountain and lack of development in the vicinity make correlation now especially uncertain.

MIDDLE FORK.

(Above Beech Fork.)

On the left, 15 miles above Hyden and above Beech fork, is the following prospect, possibly continuous for several feet below:

Whitesburg Coal.

Shale	10 ft.
Coal	7″
Shale	13″
Coal	3″
Shale	4″
Coal	5″
Shale	2″
Coal	1″
Shale	8″
Coal	2″

Shale.

Altitude, 1005.

A stripping on the left, 15¼ miles above Hyden, shows, at altitude 995, under 10 feet of shale 8 feet of shale and coal, the latter in 5 seams aggregating 1½ to 2 feet.

On the right, 15⅜ miles above Hyden, under a 40-foot sandstone rock-house is 4 inches of coal at altitude 1,040.

LOWER BAD CREEK.

On the right of Middle fork, 15¾ miles above Hyden: Altitude of mouth, 963.

On the left, ¼ mile up the creek, a stripping gives 26 inches of coal of the Whitesburg bed, under 2 feet of shale, at altitude 985.

An outcrop on the left, ½ mile up the creek, shows 9 inches of coal and thin parting at altitude 1,065, enclosed between sandstones, exposed for 10 feet below and 25 feet above it.

On the right, ¾ mile up the creek, the same bed, in a roll, at altitude 1,075, has 14 inches of coal and 1 inch parting under 1 foot of shale and then 20 feet of sandstone.

In a cliff on the right, 15¼ miles above Hyden, Charles Hoskins has an opening giving the following section:

Whitesburg Coal.

Massive sandstone	25 ft.
Black slate	3 ft.
Coal	6″
Shale	1 ft
Coal	3″
Shale	7 ft.
Coal	44″

Altitude, 985.

The resemblance of this section, including the black slate at the top, to the Saltwell branch section (12¾ miles above Hyden), is especially striking in view of the generally worthless character of the bed.

PINCH HOLLOW.

On the right of Middle fork, 17⅛ miles above Hyden: Altitude of mouth, 1,002.

On the right at the mouth of the hollow is 20 inches of coal of the Whitesburg bed under 3 feet of shaly sandstone and at altitude 1,020.

A bench mark on the right, 100 yards below Upper Bad creek, is at altitude 1,047.

On the right by the bench mark a prospect gives the following:

Sandstone	3 ft
Coal	7″
Clay	5″
Coal	18″

Altitude, 1070.

UPPER BAD CREEK.

On the right of Middle fork, 18½ miles above Hyden: Altitude of mouth, 1,042.

In the branch, ¾ mile up it, is 3 inches of coal at altitude 1,140.

A stripping on the right and in the branch, 1¼ miles up it, gives 14 inches of coal, probably of the Hamlin bed, on fire-clay under 4 feet of black slate and at altitude 1,280.

On the right, 18¾ miles above Hyden, a stripping gives the following section:

Sandstone	8 ft.
Coal	21″
Shale	1 ft.
Sandstone	2 ft.
Shale (to creek)	3 ft.

Altitude of coal, 1055.

This coal, following 6 feet in 40 feet, goes under Middle fork at the lower end of the stripping, being there 27 inches or more in thickness. At the schoolhouse, 18⅞ miles up the fork, it dips up stream in a roll which carries it under the fork again.

On the right, 19⅝ miles above Hyden, an outcrop of the same bed, rising up stream 10 feet in 150 yards, shows, at altitudes 1,090 to 1,100, 11 inches of coal under 4 feet of sandstone and then 5 feet of shale.

SANG (GINSENG) BRANCH.

On the left of Middle fork, 20⅛ miles above Hyden: Altitude of mouth, 1,070.

On the left, ⅛ mile up the branch, Levi Pennington has an 8-yard entry into the Fire-clay coal at altitude 1,205, having 27 inches of coal at its mouth, on fire-clay floor, and with 15 feet of sandstone covering.

A bench mark on the left, 20⅜ miles above Hyden, is at altitude 1,084.

WHITE-OAK CREEK.

On the right of Middle fork, 20½ miles above Hyden: Altitude of mouth, 1,085.

On the right, ¼ mile up the creek, in a 20-foot rock-house, W. N. Asher has a 6-yard entry into a seam of the Fire-clay coal or Rider, at altitude 1,190, giving 27 inches of coal half way in.

On the right, ½ mile up the creek, a prospect and pit, and on the right, ⅝ mile up, a stripping combined show the following section:

Fire-clay Coal.

Sandstone	4 ft.
Shale	1 ft.
Coal	20″
Clay, sandstone and shale	10 ft.
Coal	12″
Flint clay	5″
Coal about	10″
Altitude (lower coal), 1160.	

The 20-inch coal is not of the same seam as the 27-inch coal in the rock-house.

These are all the coals found on the creek on a recent visit, but Mr. McConathy made an early investigation for the Survey, results of which follow with my attempt at correlations added, the splitting up of the beds into widely separated seams creating much uncertainty:

Thin iron ore.
Altitude, 1665.

Francis Coal.

Sandstone	20 ft.
Coal and shale	2 ft.
Shale	15 ft.
Coal	20″
Shale	7″
Coal	14″
Shale	15 ft.
Coal	17″
Shale.	
Altitude (lowest coal), 1600.	

Flag Coal

Shale.	
Coal	10″
Shale	2 ft.
Sandstone	10 ft.
Shale	2 ft.
Coal	7″
Altitude (lowest coal), 1535.	

Sandstone	35 ft.
Shale	10 ft.

Hazard Coal.

Coal	3″
Shale	4″
Coal	2″
Shale	2 ft.
Covered interval	25 ft.
Shale	2 ft.
Coal	5″
Altitude (lowest coal), 1460.	

Sandstone	30 ft.
Shale	15 ft.
Fossiliferous limestone.	
Altitude, 1345.	

Shale	10 ft.
Coal	12″
Altitude, 1335.	

Hamlin Coal.

Sandstone	45 ft.
Shale	5 ft.
Coal	2″
Shale	2″
Coal	3″
Shale	¼″
Coal	9″
Altitude, 1280.	

Fire-clay Coal and Rider.

Sandstone	25 ft.
Shale	20 ft.
Coal	3″
Shale and coal	3″
Coal	3″
Shale	10 ft.
Sandstone	10 ft.
Coal	30″
Shale	5 ft.
Coal	24″
Shale	2 ft.
Sandstone	10 ft.
Shale	2 ft.
Coal	2″
Shale	5 ft.
Coal	7″
Flint clay	7″
Coal	8″

Altitude, 1160.

Shale	15 ft.
Coal	12″

Altitude, 1145.

Whitesburg Coal.

Shale	10 ft.
Sandstone	6 ft.
Shale	2 ft.
Coal	3″
Shale	1″
Coal	2″
Cannel slate	8″
Bony cannel coal	14″
Shale	5 ft.
Sandstone	10 ft.
Shale	4 ft.
Coal	11″

Altitude, 1105.

An outcrop on the left, 21¼ miles above Hyden and at stream level and rising with its bed, gives the following:

Whitesburg Coal.

Shaly sandstone	3 ft.
Coal	2″
Laminated sandstone	10 ft.
Coal	¼″
Shale	5″
Coal	15″

Bituminous shale.

Altitude (lowest coal), 1115.

Outcrops in left drains, 21½ and 21⅝ miles above Hyden, the latter at mile post 18, give the following:

Fire-clay Coal.

Shaly sandstone	10 ft.	Shale.	
Coal	21″	Coal	28″
Clay	14″	Clay	18″
Coal	9″	Coal	8″
Shale	8″	Shaly sandstone.	
Sandstone	12 ft.	Altitude, 1200.	

Altitude of coal, 1205.

WAR BRANCH.

On the left, 22¼ miles above Hyden: Altitude of mouth, 1,180.

A stripping on the right, ⅛ mile up the branch, gives the following:

Fire-clay Coal.

Shaly sandstone	8 ft.
Shale	2 ft.
Coal	15″
Flint clay	6″–8″
Coal	9″

Altitude, 1225.

A closed entry on the right, 22⅜ miles above Hyden, into the Fire-clay coal, at altitude 1,245, has a covering of 8 feet of shale. The dump shows no flint clay.

RYE COVE BRANCH.

On the right of Middle fork, 22⅝ miles above Hyden: Altitude of mouth, 1,200.

On the right, ¼ mile up the branch, Jack Lewis has an entry into the Fire-clay coal, at altitude 1,260, having 28 inches of coal under 8 feet of shaly sandstone. The floor is soft but flint clay lies in the dump.

A bench mark on the left, 22⅞ miles above Hyden, is at altitude 1,215.

ROARK BRANCH.

On the left of Middle fork, 23½ miles above Hyden: Altitude of mouth, 1,240.

A pit in the branch at R. J. Lewis' store, ⅛ mile up, gave 26 inches of coal on a hard floor, with more coal reported below it. This is of the Fire-clay coal bed, at altitude 1,250. A thin coal with two partings lies 20 feet higher, with shale between.

A stripping on the right, 23⅝ miles above Hyden (above Marrowbone creek), gives the following section:

Fire-clay Coal.

Coal stain.	
Shale	8 ft.
Coal	38″
Bituminous shale about	4″
Flint clay about	6″
Coal about	8″
Altitude, 1265.	

On the left, 24 miles above Hyden, an outcrop formerly showed the Fire-clay coal, at altitude 1,260, with 35 inches of coal under 20 feet of shale and then 5 feet of laminated sandstone, and again on the left, 24¼ miles above Hyden, it showed the same thickness of coal, especially fine looking, in part slickenseit, under shale and at altitude 1,290. Here it is 25 feet above Middle fork, whereas the preceding outcrop is but 5 feet above it.

An outcrop on the left of Middle fork, opposite the mouth of Turkey branch, 25 miles above Hyden, shows the following:

Fire-clay Coal.

Coal.	
Flint clay	7″
Coal	14″
Bituminous shale	1″
Sandstone.	
Altitude, 1300.	

A bench mark on the left of Middle fork, 80 yards above and 5 feet higher than the mouth of Turkey branch, is at altitude 1,290.

A stripping on the right, 25 miles above Hyden and above Turkey branch, gives a following section. With it is the bed section at the face of a 6-yard entry on the right, 25⅛ miles up Middle fork:

Fire-clay Coal.

Stripping.		Entry.	
Shaly sandstone	8 ft.	Sandstone	3 ft.
Clay shale	1 ft.	Shaly sandstone	5 ft.
Coal	40″	Coal	42″
Flint clay	9″	Altitude, 1330.	
Clay	12″		
Altitude, 1325.			

Between and above these two is the following outcrop:

Fire-clay Coal Rider.

Sandstone	3 ft.
Coal	5″
Shale	10″
Coal	12″
Altitude, 1370.	

SPRUCE PINE CREEK.

On the left of Middle fork, 25½ miles above Hyden: Altitude of mouth, 1,320.

DRY FORK.—On the left, ¼ mile up Spruce Pine creek: Altitude of mouth, 1,325.

On the left at the head ofa right drain, ¾ mile up the fork, Stratton Taylor has a covered stripping into a bed, apparently about 6 feet thick, at altitude 2,065.

On the right at the forks of Dry fork, 1½ miles up it, Garrard Colwell has a 2-yard entry in which is the following bed section:

Sandstone	5 ft.
Shale	5 ft.
Black slate shale and coal	35″
Coal	13″

Altitude, 1920.

In the point of the hill between the forks, 1½ miles up, Mr. Garrard has an 8-yard entry of the following bed section at its face:

Sandstone.	
Shale	4 ft.
Coal	12″
Shale	9″
Coal	8″
Shale	2″
Coal	24″

Altitude, 2085.

This is on a broad bench and is far enough below the top of the hill to afford a good mining area.

LONG FORK.—On the right, 1¼ miles up Spruce Pine branch: Altitude of mouth, 1,495.

On the right, a mile or two up this branch, an opening, as reported by Neil Robinson to the Tennis Coal Co., has the following section:

Coal	34″
Splint coal	7″
Shale	2″
Coal	7″
Shale and coal	5″
Coal	16″

Altitude, 2015.

On the left of Middle fork, 25½ miles above Hyden, an entry into the Fire-clay coal, at altitude 1,340, has, 3 yards in, 34 inches of coal on a hard floor and under 3 feet of shale covered by sandstone.

MAZIE BRANCH.

On the right of Middle fork, 26½ miles above Hyden: Altitude of mouth, 1,435.

On the right, at the mouth of the branch, A. J. Asher has a long entry into the Hazard (?) coal, at altitude 1,665, with 32 inches of coal, 6 yards in, under 2 feet of sandy shale and then 5 feet of sandstone.

A coal stain on the right, by the road, 26⅝ miles above Hyden, at altitude 1,515, is probably of the Haddix bed.

On the left, 27 miles above Hyden, a cliff with base at Middle fork exposes the following:

Haddix (?) Coal.	
Shale	30 ft.
Sandstone	1 ft.
Shale	5 ft.
Coal	6″
Fire-clay.	

Altitude, 1550.

The top of a 40-foot cliff along which the road runs is, at 27⅛ miles above Hyden, at altitude 1,655.

ROUGH BRANCH.

On the left of Middle fork, 27¼ miles above Hyden: Altitude of mouth, 1,570.

On the left at the head of the left fork of the branch, ½ mile from Middle fork, R. L. Helton has a stripping now nearly covered from which the following section was obtained:

Clay shale.	
Coal	13″
Shale	14″
Coal	40″
Shale	2″
Coal	7″
Shale	6″
Coal	18″

Altitude, 2050.

A streak of pyrite, 6 inches from the bottom on one side of the opening, gave the only visible sign of sulphur.

This is near the opening on Long fork, Spruce Pine creek.

A coal stain in the road, 27⅜ miles up, at altitude 1,655 is probably of the Hazard bed slipped somewhat from its normal position.

On the left branch of Middle fork, 27½ miles above Hyden, with mouth at altitude 1,615, on the left beside the store, 50 yards up, the branch is a bench mark, at altitude 1,628.

A closed prospect, ¼ mile up the branch, by the road to Straight creek, at altitude 1,785, is probably of the Flag bed.

RAINBOW (MEADOW) BRANCH.

On the right of Middle fork, 28½ miles above Hyden: Altitude of mouth, 1,675.

The following coals were found in early prospecting along this branch, the highest at William Helton's:

Hindman (?) Coal.

Shale	10 ft.
Coal	2″
Black slate	10″
Coal	12″
Shale	8″
Coal	28″

Altitude, 1910.

Flag (?) Coal.

Sandstone	12 ft.
Coal	4″
Sandstone	10 ft.
Coal	13″
Sandstone	8 ft.
Coal	7″

Altitude (lowest coal), 1810.

Hazard (?) Coal.

Sandstone	10 ft.
Coal	26″

Altitude, 1730.

An up-stream dip is probable which would result in somewhat greater intervals than are indicated by the altitudes.

On the right at the former splash-dam at the forks of Middle fork, 29⅜ miles above Hyden, coal 26 inches thick, of the Hazard (?) bed, at altitude 1,735, is exposed in a rock-house.

On the right, ⅜ mile up the left fork, 100 yards above the upper house on Middle fork, A. J. Asher has an opening which gave the following section:

Hindman (?) Coal.

Sandstone	1 ft.
Shale	5 ft.
Coal	2″
Shale	12″
Coal	20″
Shale	12″
Coal	28″

Altitude, 1925.

While correlation of coals above Spruce Pine creek is open to question, no doubt is felt that the 2-foot coal on Mazie and Meadow branches and at the forks of Middle fork are the same bed, or that the upper Meadow branch and left fork of Middle fork coals are one. The dip of strata indicated by these, slight down Middle fork to Rough branch, carries the Hindman (?) coal some 150 feet under the Helton coal on that branch.

A large area of the Helton coal is available in this region, and of the Hindman (?) coal a far greater area.

In aid of further development the following notes are added, altitudes (still subject to correction) being corrected to conform to accurate level not available in former reports, but correlations are still uncertain.

CUMBERLAND RIVER.

STRAIGHT CREEK.

PETER BRANCH.—On the left, 1 mile above Salt Trace.

At Millard Whitehead's, 2 miles up this branch, and then ¼ mile up its right branch, the Helton coal, at altitude 2,125, is 43 inches thick without parting.

SALT TRACE.—On the left, 20 (?) miles up Straight creek: Altitude of mouth, 1,210.

On the right by the road, ¼ mile up the trace, a prospect into the Fire-clay (?) coal, at altitude 1,460, was reported to have 28 inches of coal. Ten feet of shale cover it.

On the left, ¾ mile up, a now closed prospect gave the following:

Hazard (?) Coal.

Shale and sandstone	15 ft.
Black slate or slaty coal	8″
Shale	8″
Coal	32″

Altitude, 1770.

Under the coal bed is 30 feet of sandstone to the forks of Salt Trace, at altitude 1,740.

On a right branch, ⅝ mile up the left fork, on the right, ¼ mile up the right branch, F. J. Colwell has a 6-yard entry with the following section at its face:

Hindman (?) Coal.

Shale.	
Coal	19″
Shale	11″
Coal	26″

Altitude, 1955.

What appears to be the same bed has been opened on the right, ¾ mile up the right or road fork, at altitude 2,005.

LAUREL BRANCH.—On the north, 1 mile below Salt Trace.

A closed prospect near the head of the branch gave the following section, the bottom coal as reported, only its upper 8 inches being visible when visited:

Helton (?) Coal.

Shale, clay and earth	10 ft.
Coal	1 ft.
Clay with coal	2½ ft.
Coal	4 ft

Altitude, 2240.

This excavation indicated a bed of the thickness given. Some fine looking splint coal lay on the dump.